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1975 SUPPLEMENT
TO
1967 REPORT ON IMPROVEMENTS TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)

CHARLES A. PARTHUM
No. 7907

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NOVEMBER 1975

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Inc.

CONSULTING ENGINEERS

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CHARLES A. PARTHUM
Senior Vice President

November 24, 1975

Mr. Joseph F. Casazza
Commissioner of Public Works
City Hall
Boston, MA 02201

Boston, Massachusetts
1975 Supplement to 1967 Report on
Improvements to the Boston Main
Drainage System
(Facilities Plan)

Dear Commissioner Casazza:

In accordance with the terms of our agreement with the City of Boston dated April 24, 1975, we have reviewed portions of our report to the City of Boston on "Improvements to the Boston Main Drainage System" dated September 28, 1967 and our update of portions of that report submitted September 30, 1972. We have conducted a detailed examination of the routes of the several proposed interceptor replacements and the Mt. Vernon Street Sewer, have updated our preliminary estimates of costs of construction of those conduits and have undertaken on your behalf several other requirements of the U.S. Environmental Protection Agency and the Commonwealth of Massachusetts Division of Water Pollution Control needed for the City to apply for Step II grant for preparation of final plans and specifications.

Reference is also made to our letter reports to you of July 13, 1970 on the subject "Preliminary Engineering Report on Harbor Pollution Control Program in the Old Harbor Area"; of May 3, 1972 on the subject "Proposed Harbor Pollution Control Program for the Old Harbor Area", in which we reviewed and prepared estimates of cost relative to a proposed South Boston Pollution Control Conduit, Carson Beach Pumping Station, South Boston Force Main and a chlorination detention station near the Reserved Channel, and our report to the Commonwealth of Massachusetts Division of Water Pollution Control on "Water Quality Improvement of Tenean and Malibu Beaches," November 1972.

The need for the construction proposed herein is documented fully in the 1967 Report and summarized in this report. The construction of the proposed facilities is required for both hydraulic and structural reasons. The existing Main Drainage system was constructed between 1877 and 1894. Structural failures have occurred, the most notable being those of the Main Interceptor in Massachusetts Avenue, and at Kosciuszko Circle. The system is frequently surcharged from sanitary wastewater, stormwater, and

ATER RESOURCES • WATER SUPPLY AND TREATMENT • SEWERAGE AND SEWAGE TREATMENT • INDUSTRIAL WASTE TREATMENT
DRAINAGE AND FLOOD CONTROL • WATER AND AIR POLLUTION CONTROL • REFUSE DISPOSAL • RESEARCH AND DEVELOPMENT

tide water. The construction of an operable system consisting of the proposed facilities is urgently required to collect and discharge dry weather wastewater from the Boston Main Drainage Works to the MDC system for treatment, and to eliminate physical hazards.

The requirement for immediate initiation of design and construction of the interceptor replacements and the Mt. Vernon Street Sewer is further documented by the implementation schedule in the National Pollution Discharge Elimination System discharge permit issued to the City of Boston by the U.S. Environmental Protection Agency and the Commonwealth of Massachusetts Division of Water Pollution Control, executed and dated by the Director of the DWPC on April 1, 1975 (State designation M-121) and by the Enforcement Division of EPA, Region I, Boston, on April 2, 1975 (Federal designation MA-0101192). (Appendix K).

The report is submitted as a Facilities Plan under Section 201 of PL 92-500 of 1972. The plan includes an engineering report with a detailed description of the routes of the several interceptor replacements and the Mt. Vernon Street Sewer, and estimates of construction costs for the several items, a report on analysis of infiltration and inflow (I/I), discussion of the cost-effectiveness of the proposed works and of the effect on water quality. In addition, supporting information includes an environmental assessment of the effect of the proposed construction on the waters of the harbor and the immediate environment, a reference to a comprehensive industrial waste survey in progress by others, and other information required by the U.S. EPA and Massachusetts DWPC for a Step II grant for preparation of final plans and specifications.

Assistance to the City is being furnished in the following matters, including:

Public Participation for Hearing on the Proposed Projects Appendix E.

Certification of City Authority to File for Grant to extent of obtaining and including certificate with application.

City's certificate of adherence to Civil Rights requirements

City's certificate of Assurance of Civil Rights

State Clearing House Notice of Intent Form (A-95), Appendix G

Legislation, Appendix H

Revision of sewer use charges. Pending, Appendix O

Industrial cost recovery. Pending, Appendix O

Revision of sewer ordinance. Pending, Appendix M

The eligibility of the several projects is certified in letters included in Appendix L.

The total estimated project costs, including 25% allowance for engineering and contingencies based on the assumption that the EPA schedules are met, is about $58,000,000 as tabulated below. These are costs projected to the cost levels estimated to prevail in the future as the levels upon which bids would be received for each of the several projects. Of this, Federal participation at about 75% and State participation at about 15% should reimburse the City for about 90% of the project cost. The net cost to the City at about 10% of project costs is thus estimated at about $5,800,000. This does not include the cost of acquisition of land, which is not eligible for reimbursement. The cost of land and easements is minor for these projects, most of which would be located through public lands and waters.

Estimated Costs of Recommended Construction Program

Improvements to the Boston Main Drainage System*

Description	Estimated** Construction Cost
Mt. Vernon Street Sewer, Columbia Point to MDC Diversion Chamber at Kosciuszko Circle (ENR 2980)	$3,800,000
Main Interceptor Replacement, from East Side Interceptor Replacement to MDC Columbus Park Headworks (ENR 3340)	13,370,000
East Side Interceptor Replacement - South Branch, from Massachusetts Avenue to Main Interceptor Replacement (including crossing at S.E. Expressway and connections at East Concord Street, East Brookline Street, and Union Park Street)(ENR 3175)	8,240,000
East Side Interceptor Replacement - North Branch, from High Street to Main Interceptor Replacement (including connections at High Street, Oliver Street, Summer Street, Dorchester Avenue, Troy Street (Traveler Street), and East Berkeley Street)(ENR 3340)	32,590,000
TOTAL	$58,000,000
Local Share, City of Boston (after anticipated Federal and State aid)	5,800,000

* All items deemed eligible at this time for Federal and State grants.

** Includes Contractor's contingencies and overhead and profit, and allowance for engineering and general contingencies. Does not include filling those sections of the existing East Side and Main Interceptors to be abandoned.

The infiltration/inflow analysis was addressed with two results. First, investigation revealed that, whether sewers are rehabilitated or not, the elimination of excessive infiltration would not permit a reduction in the large nominal diameters of the proposed interceptor replacements. Secondly, a Phase II evaluation is indicated. If performed, it should relate to the cost-effectiveness of rehabilitation compared to cost of conveyance and cost of operation and maintenance of treatment at the Columbus Park Headworks and at the Deer Island Treatment Plant.

Urban renewal areas under Boston Redevelopment Authority are proposed to be served by sewers to be constructed under BRA auspices in part by funds requested under separate Step III construction grants. Portions of Section 201 Facilities Plans for these projects are included with this report as appendices. These works include:

South End Urban Renewal Area (C.E. Maguire, Inc.)	Appendix A
South Cove Urban Renewal Area (C.T. Main, Inc.)	Appendix B
Downtown Waterfront Urban Renewal Area (Schoenfeld Assoc. Inc.)	Appendix C

Acknowledgements

We wish to express our appreciation to you and to your staff for the cooperation and assistance given us during the preparation of this update of this report and especially to Mr. James A. O'Rourke, Division Engineer, Sewer Division. We also would like to acknowledge the cooperation of officials in the Boston Redevelopment Authority, the Metropolitan District Commission, the Massachusetts Division of Water Pollution Control and Region I of EPA, with whom we met during the course of our investigations and preparation of this Facilities Plan.

We trust that this report will meet your current needs. We are available to discuss the contents of this report with you at any time and to assist you further with this project.

Very truly yours,

CAMP DRESSER & McKEE Inc.

Charles A. Parthum

C.A. Parthum

257-24-RT

1975 Supplement to 1967 Report on Improvements to the Boston Main Drainage System, (Facilities Plan), November 1975

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CHAPTER I

INTRODUCTION

Scope

The scope of work for this report and its appendices includes entries for applicable items listed in the "Checklist for Federal applications, Step II - Final Plans and Specification", (issued by the State under date of July 22, 1975).

The following tabulation based on the checklist shows the state of the grant application as of the date of submission of this report.

1. Engineer selected	In progress
2. Funds appropriated	To be certified by City
3. Completed application	
a. Facilities Plan	
1. Engineering Report	Submitted herewith
2. Infiltration/Inflow	Analysis reported upon herein (Ch. III)
3. Cost-Effective Analysis	Included in Chapters II and III.
4. Best practical waste-water treatment	Not applicable to this request for grants for construction of intercepting sewers because is the subject of report by others.
5. Meeting of Water Quality Standards	Chapter II and IV.
b. Environmental Assessment	Environmental assessment statement as required by EPA is presented in Chapter IV. The Environmental Assessment Form required by the State is not necessary at this time.
c. Public Participation	Report on the official public notification and minutes of public hearing

	are included in Appendix E.
d. Authority to File	Certificate of authority to file prepared by the City is enclosed as Appendix F.
e. Civil Rights and Assurances of Civil Rights	Certificates are presented as prepared by the City, in Appendix F.
f. State Clearing House Notice of Intent (OMB-A-95)	The State Clearing House Notice of Intent form is included as Appendix G, and notes appended thereto indicate action taken in the Clearing House review.
g. Agreements with other communities	It is our opinion that no agreements with other communities are necessary.
h. Approval of site by State	State approval will be required for sections of conduit routes in and crossing certain highways and for locations in Fort Point Channel, (Appendix I).
i. Legislation if needed	In accordance with information from the Dept. of Public Works, Division of Waterways, legislation by the General Court may be necessary to approve alignment and construction of the North Branch of the East Side Interceptor Replacement in harbor waters outside of the Rivers and Harbors bulkhead line in the Fort Point Channel area (Appendix H).
j. Proposed engineering agreement	To be submitted separately

1. Breakdown of fees	
2. Method of computation	
k. Construction Cost Breakdown	Estimates of construction costs with itemized breakdown are included in the report with the descriptions of the several interceptor replacement and sewer construction projects and are summarized in the Letter of Transmittal and in Chapter II.
l. Sewer Use Charges	The existing sewer use charge regulations are being revised by the City Legal Dept. with the assistance of the consultants. A preliminary copy of the sewer use charge ordinance is appended as Appendix O.
m. Industrial cost recovery - agreement with major industries	Industrial cost recovery is under current study by the MDC and a consultant in a comprehensive report for the MDC district. Legislation (HR 5759) has been filed by MDC. Agreements with major industries will be negotiated in accordance with the approved recommendations from this report, and legislative acts. (App. O)
n. Sewer Use Regulations	The existing sewer use regulations incorporated in the present City ordinance

	are being revised by the City Legal Dept. with the assistance of the consultants to incorporate requirements of the EPA regulations (Appendix M).
o. Industrial waste survey, if needed	Industrial waste survey presented in CDM 1967 report is referenced and pertinent items summarized. A survey is in progress by a consultant for the MDC. No results have been made public (Chapter VI).
p. Pilot plant study, if needed	It is our opinion that no pilot plant study is necessary for the construction of the interceptor replacements and the Mt. Vernon Street Sewer.

Need

The need for the construction proposed herein is documented fully in the 1967 report and in Chapter II in summary. The construction of the proposed facilities is required for both hydraulic and structural reasons. The existing Boston Main Drainage system was constructed between 1877 and 1894. Structural failures have occurred, the most notable being those of the Main Interceptor in Massachusetts Avenue and at Kosciuszko Circle. The system is frequently surcharged from sanitary wastewater, stormwater, and tide water which results in overflows to and pollution of Boston Harbor. An operable system consisting of the proposed facilities is required to collect and carry dry weather

wastewater from the Main Drainage system to the MDC system and for elimination of physical hazards.

The need for immediate initiation of design and construction of the interceptor replacements and the Mt. Vernon Street Sewer is further documented by the implementation schedule issued by the U.S. Environmental Protection Agency and the Commonwealth of Massachusetts, Division of Water Pollution Control, executed and dated by the Director of the DWPC on April 1, 1975 (State designation M-121) and by the Enforcement Division of the EPA, Region I, Boston, on April 2, 1975. (Federal designation MA 0101192). (Appendix K). The permit is to expire on June 30, 1977.

The implementation schedule, on page SC2, Paragraph B, states:

"4. Commence preparation of final plans and specifications for the following:

a. By January 1, 1976, for the Mt. Vernon Street Sewer

b. By June 30, 1976, for the East Side Interceptor

c. By June 30, 1976, for the Main Interceptor

5. Submit to the Regional Administrator for review and the Director for approval, plans and specifications for the above, as follows:

a. January 1, 1977

6. Submit progress reports on 4 above, as follows:

a. July 1, 1976

b. January 1, 1976 and October 1, 1976

c. January 1, 1976 and October 1, 1976"

Note that under the NPDES discharge permit issued to the Metropolitan District Commission for the Deer Island outlet the MDC is required as a condition of its final permit to provide for "the application of the best

practicable control technology currently available at its Deer Island outlets to Boston Harbor and will assure that the receiving waters affected by the discharge will meet applicable water quality classification requirements." All the dry weather flows from the areas served by the proposed Main Interceptor and East Side Interceptor replacement conduits and the Mt. Vernon Street Sewer will discharge to the Columbus Park Headworks and thence through the tunnel under the Harbor to the Deer Island Wastewater Treatment Plant for treatment and disposal into the waters of Boston Harbor and thus will be affected by the provisions of the MDC Deer Island NPDES permit.

1967 Report

CDM prepared and presented in September 1967, a report in two volumes to the City of Boston, Massachusetts, titled "Report on Improvements to the Boston Main Drainage System." It included a description of the existing Boston and adjacent metropolitan sewerage systems, the basis of design of sanitary sewers and storm drains, a brief description of the sanitary condition of Boston Harbor and adjacent waters, studies of alternative methods of pollution abatement, and recommendations for improvements to the existing sewerage system, including the recommendations for the replacement of the Main Interceptor and the East Side Interceptor as well as appurtenant connections and conduits necessary to make a working system when the interceptor replacements had been completed. The report included a recommended construction program with a discussion of methods of financing.

The report also introduced and recommended the construction of a system of deep tunnels beneath the City and adjacent areas to receive overflow discharges from the existing combined sewer regulators, the transmission of

of such mixed stormwater and sanitary wastewater to a point of treatment and subsequent release in deep water offshore. Such a system would eliminate combined sewer overflow discharges for the inner harbor waters with consequent improvement of quality of those waters.

A South Boston Pollution Control Conduit and Carson Beach Pumping Station and Force Main to the Reserved Channel recommended in the 1967 Report in Chapter VIII, discussed further in the Consultant's 1970 letter report to you, "Preliminary Engineering Report on Harbor Pollution Control Program in Old Harbor Area," and the May 1972 letter report "Proposed Harbor Pollution Control Program for the Old Harbor Area" would substantially eliminate discharge of mixed stormwater and sanitary wastewater overflows to the Old Harbor portion of Dorchester Bay.

A subsequent report to the Division of Water Pollution Control in November 1972 on "Water Quality Improvement of Tenean and Malibu Beaches" would substantially extend the elimination of overflows to those portions of Dorchester Bay.

Eligibility of Project

The eligibility of projects is attested to by a letter from the office of the Director, Division of Water Pollution Control, dated June 16, 1975 quoted in part as follows:

> "The Division of Water Pollution Control has reviewed the information submitted by your municipality (City of Boston) in response to our letter of March 19, 1975 and has made a preliminary determination that the following projects in your municipality are eligible for federal and state grant participation and we are including them on our 1976 Federal Priority

List. Included in these lists are the following:

Main and East Side Interceptor (including Mt. Vernon Street Sewer)

A copy of this letter and a copy of a letter sent by the City of Boston to the Division of Water Pollution Control, dated April 30, 1975, is included as Appendix L to this report.

Discussion of Construction Schedule

The Mt. Vernon Street Sewer has been scheduled by the State and Federal NPDES permit as the first order of priority for design. The length of conduit is relatively short (about 3140 ft), there are few special structures, both surveys and subsurface exploration are not complex and design should be straightforward. For this reason, the Mt. Vernon Street Sewer could be designed within a short time and could be under construction sooner than the remainder of the program.

The Main Interceptor Replacement should be the second item of design and construction so as to complete its construction at least by the time the East Side Interceptor Replacement, South Branch, is completed to make it of use. Surveys and borings for the Main Interceptor Replacement alignment should be initiated as soon as the design phase, Step II, is approved by EPA. Design should follow as soon as sufficient information is available.

Surveys and subsurface exploration for the North and South Branches of the East Side Interceptor Replacement should follow as soon as possible after those for the Main Interceptor Replacement, and detail design for these branch interceptor replacements should be started as soon as information becomes available.

It should be noted that with the South Branch of the East Side Interceptor and the Main Interceptor Replacements constructed and in use, and with the completion of the several special structures at Massachusetts Avenue, East Concord Street, East Brookline Street, and Union Park Street, sewers in a portion of Massachusetts Avenue south of Harrison Avenue, large areas in the South End could be served through the interceptor replacements, if the existing Main Interceptor should become inoperable, and reduce the flow in the Main Interceptor during emergency repairs.

It should be noted also, that a new sewer in Tremont Street, recently constructed by BRA to serve the north portion of the South End Urban Renewal Area and which now discharges to the existing Main Interceptor would not be served by gravity to the proposed South Branch Replacement because the Main Interceptor at Massachusetts Avenue is several feet too low. This situation is discussed in detail in Chapter II.

Construction of the North Branch without undue delay is necessary to avoid the difficulties now experienced with the grit chamber at High Street. The invert of the conduit entering this chamber is at elevation minus 2.9 and the invert of the outlet to the existing East Side Interceptor is at elevation minus 0.9. This two foot rise in the invert at the outlet results in trapping accumulations of grit and putrescent sludges.

The length of time for construction and a diagram of a design and construction schedule is included in Chapter II.

Financial Aid

Financial aid in the form of grants would be received in the amount of about 75% from Federal sources and about 15% from state sources toward the amount necessary for Step II - the design of the required facilities. The

Step III grant would follow about the same proportions of aid, namely, 75% and 15%. With this amount of aid, the City share to be presently raised, presumably by bond issue, would be about 10% of the total construction cost. Some short term borrowing is always necessary to meet financial obligations while grant payments are awaited.

The amount requested for funding by the Step II grant is computed as the total estimated amount for engineering work including detailed engineering investigation and design, the cost of detailed alignment and profile instrument surveys, the completion of borings and other subsurface exploration, and the estimated contribution by the City for legal, administrative, and engineering services which would be eligible for reimbursement. Costs of land and easements and engineering surveying and legal cost for land acquisition are not eligible for grant aid.

The basis of cost estimates is discussed in Chapter II.

BRA Projects Included

The City of Boston Public Works Department is the designated agency in the City to make applications to EPA and MDWPC for grants in aid of construction. For this reason, projects sponsored by BRA in the South End, South Cove and Downtown Waterfront Urban Renewal Areas are included herein as appendices A, B, and C.

Each BRA project statement includes its own brief engineering report prepared by others with a description of the project, project construction general plan and estimate of cost.

The assessment statement in the main report covers the area served by the proposed Main Interceptor Replacement including the area served by its tributary, the East Side Interceptor Replacement. This area includes the

sub-areas within which the BRA projects lie, and so applies to them also. Each individual report, however, includes comments on temporary and local environmental effects of the proposed works.

A single report of public participation of a joint public hearing relating to the construction proposed under the City of Boston Public Works Department and the Boston Redevelopment Authority is included as Appendix E.

Areawide Waste Treatment Management Plan

The completion of an areawide waste treatment management plan (Section 208 of PL 92-500) is not a requirement of acceptance of the present report, based on a decision given orally by the Division of Water Pollution Control in this instance. Such a plan is under study by the Metropolitan Area Planning Council.

Project Personnel

The investigation and preparation of this report were conducted under the general supervision of Mr. Charles A. Parthum, P.E., Senior Vice President,Camp Dresser and McKee Inc. The project manager and deputy project manager are Mr. Elwood C. Richardson, P.E., Vice President and Mr. Thomas R. Morgan. The component manager is Mr. Lincoln W. Ryder, P.E., with Messrs. Ronald M. Lepri, Victor F. Coletti, and Charles A. Jutras, Assistant Engineers.

CHAPTER II

Engineering Report, Section 201 Facilities Plan

Proposed Interceptor Replacements and Mt. Vernon Street Sewer

As discussed in Chapter VIII of the 1967 Report, and expanded upon in our 1972 Report Update, the intercepting sewer replacements, the Main Interceptor Replacement and the East Side Interceptor Replacement, North and South Branches, are proposed where the existing principal lines are estimated to have inadequate capacity to carry the estimated year 2020 peak design flows without overflow to the Harbor, or have exhibited evidence of structural deterioration based on available information. The Mt. Vernon Street Sewer is proposed as a separate sanitary sewer to eliminate direct connections to an otherwise infrequently used portion of the existing Main Interceptor, as discussed hereinafter.

Basis of Design

The basis of design for the interceptor replacements and the Mt. Vernon Street Sewer proposed herein has not changed from that developed in the 1967 Report. It is briefly summarized below from Chapter V of that Report.

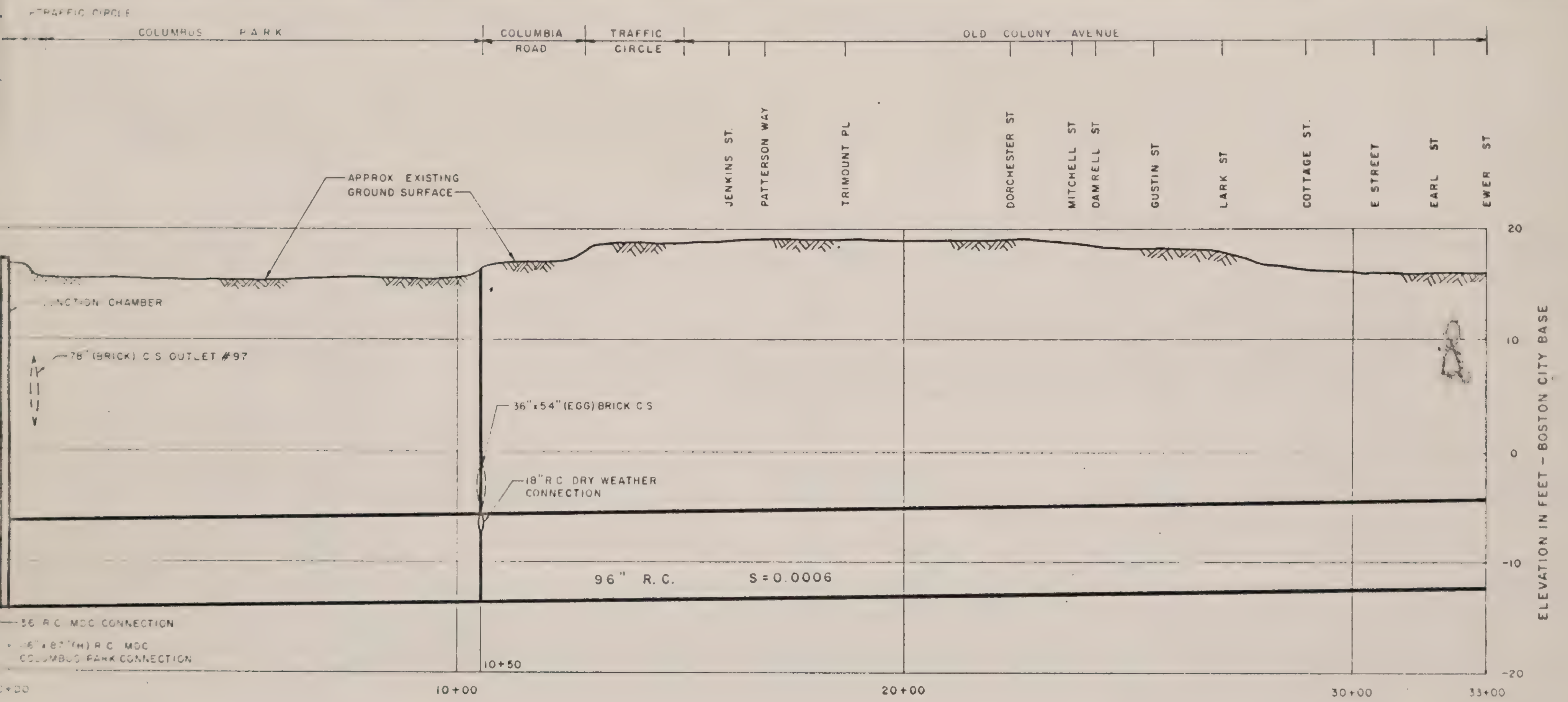
The proposed interceptor replacements and the sanitary sewer have been designed to carry peak dry weather wastewater (sanitary wastewater and industrial wastes) flows, including allowances for extraneous flows, expected for the year 2020. No allowance has been made in the interceptor replacements or in the Mt. Vernon Street Sewer for storm flow in addition to the peak dry weather flow. No direct storm drain connections should be permitted to connect to the interceptor replacements and the Mt. Vernon Street Sewer from any source. All connections to the interceptor replacements except as noted below should be made through regulators which will limit the rate of flow to the peak dry weather rate, or during storm times, to an equivalent rate.

In some cases, however, because of exceptional existing conditions, separate sanitary sewers have been connected to the existing interceptors and will in the future be connected directly to the interceptor replacements. In no case, however, should combined sewers be connected directly to the interceptor replacements. A regulator must be provided at each connection, and the storm flow portion of the combined flow conducted to a storm water overflow conduit.

The intercepting system of the Boston Main Drainage District is intended only for peak dry weather flows which would be transported to the headworks of the MDC sewerage system either at Ward Street from the West Side Interceptor and Stony Brook Interceptor, or at Columbus Park from the remaining portions of the Boston Main Drainage District.

The proposed interceptor replacements and the Mt. Vernon Street Sewer, have been designed to carry the estimated peak dry weather flows utilizing about 90% of their flowing-full capacities. These nominal capacities are based on the sewer flowing crown-full with the hydraulic grade line parallel to the invert slope.

All conduits are proposed to function as gravity pipelines and will be constructed at slopes sufficient to maintain at least the minimum self-cleansing velocity: 2 ft per second when flowing full. A Manning formula coefficient "n" of 0.013 is used in the design of these sewers. Subject to constraints in further detail design, it is proposed that sewers will be constructed of reinforced concrete and that connecting pipes smaller than 18" may be of vitrified clay pipe. To minimize infiltration of groundwater, preformed compression joints are recommended. Tide gates must be provided or rehabilitated to prevent direct connection between tide water and the sewerage system.



LEGEND

— — —	EXISTING FACILITIES
═══	PROPOSED FACILITIES
R C	REINFORCED CONCRETE
C S	COMBINED SEWER
(R)	RECTANGULAR
(H)	HORSESHOE

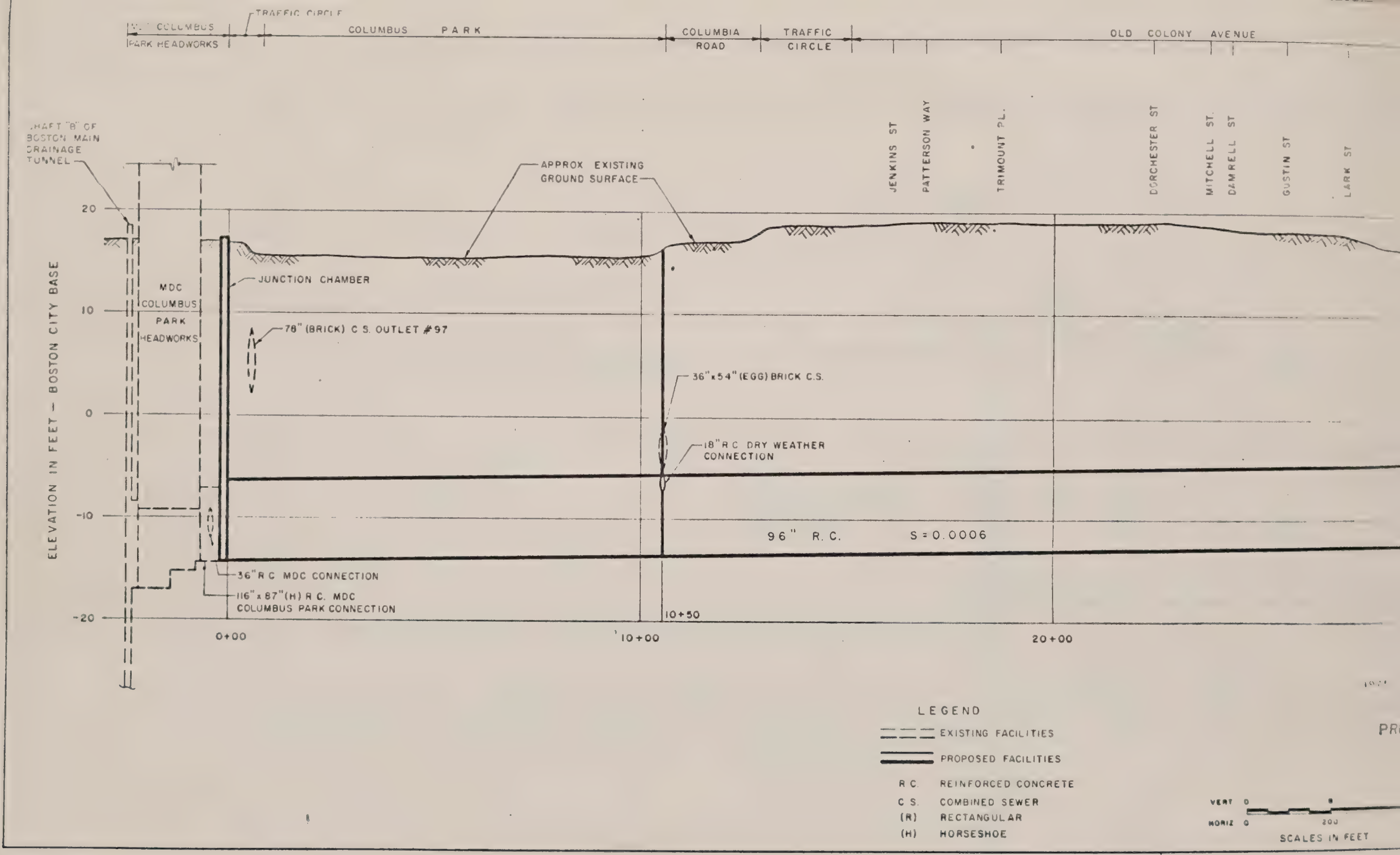
VERT. 0 8 16
HORIZ 0 200 400
SCALES IN FEET

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)

PROFILE OF
PROPOSED MAIN INTERCEPTOR REPLACEMENT
STA 0+00 TO STA 33+00

Camp Dresser & McKee Inc
Environmental Engineers
Boston, Massachusetts

FIG. II-1
SHEET 1 OF


COLUMBUS
PARK HEADWORKS
TRAFFIC CIRCLE
COLUMBUS PARK
COLUMBIA ROAD
TRAFFIC CIRCLE
OLD COLONY AVENUE
SHAFT "B" OF BOSTON MAIN DRAINAGE TUNNEL
APPROX EXISTING GROUND SURFACE
JENKINS ST
PATTERSON WAY
TRIMOUNT PL.
DORCHESTER ST
MITCHELL ST.
DAMRELL ST
GUSTIN ST
LARK ST
ELEVATION IN FEET — BOSTON CITY BASE
20
10
0
-10
-20
MDC COLUMBUS PARK HEADWORKS
JUNCTION CHAMBER
78" (BRICK) C.S. OUTLET #97
36"x54" (EGG) BRICK C.S.
18" R.C. DRY WEATHER CONNECTION
96" R.C.
S = 0.0006
36" R.C. MDC CONNECTION
116"x87"(H) R.C. MDC COLUMBUS PARK CONNECTION
10+50
0+00
10+00
20+00
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER
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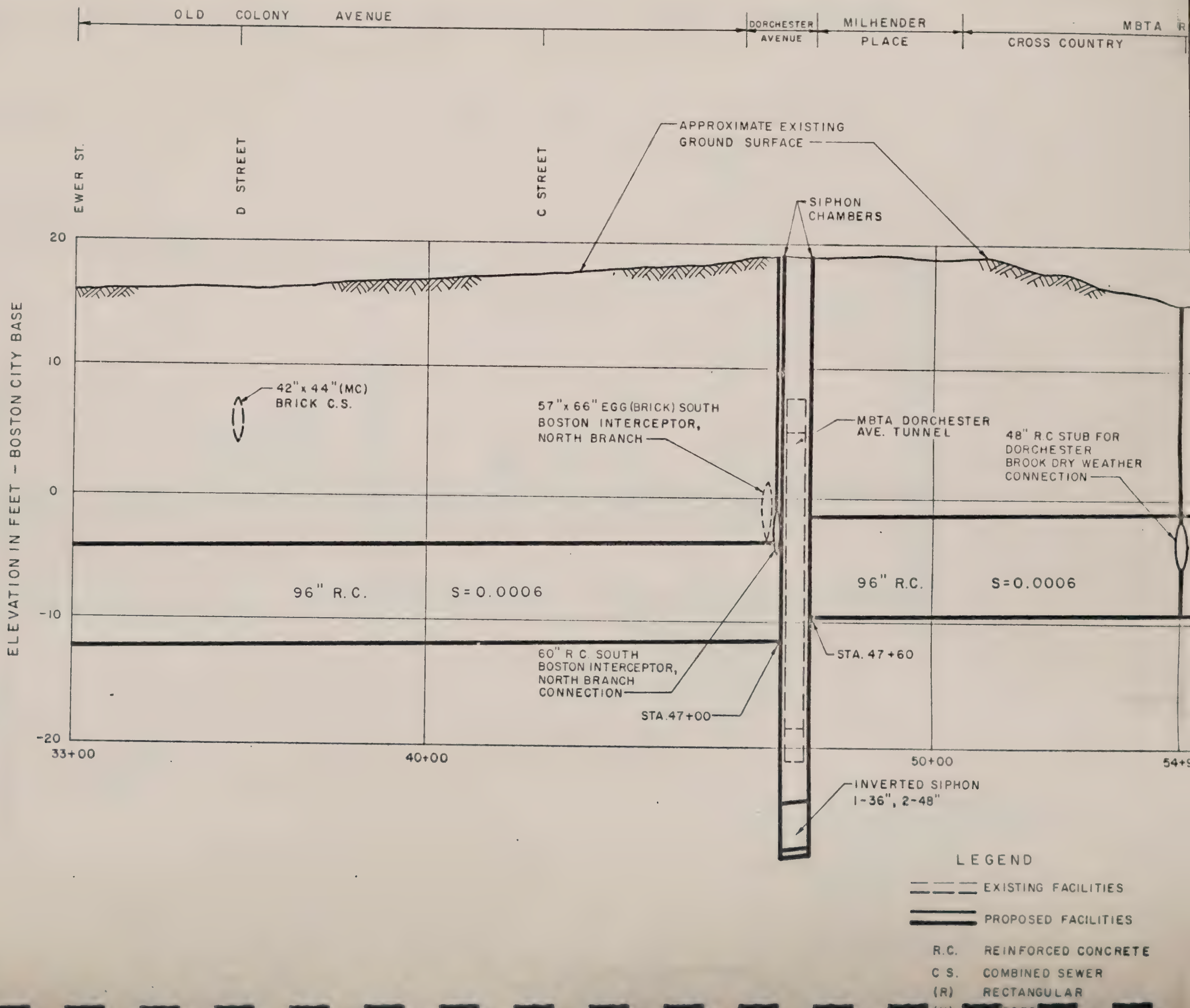
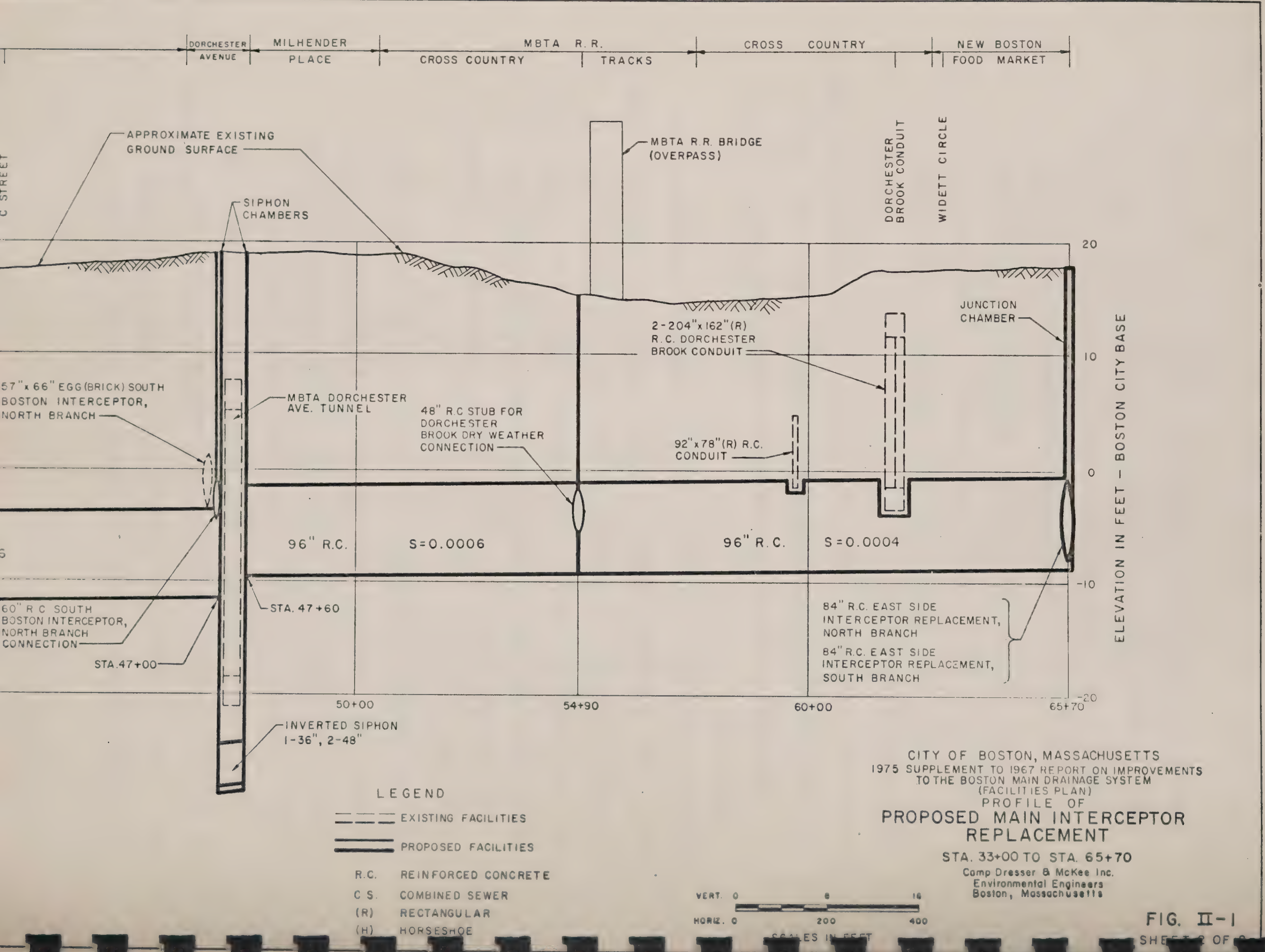

OLD COLONY AVENUE
DORCHESTER AVENUE
MILHENDER PLACE
CROSS COUNTRY
MBTA R
EWER ST.
D STREET
C STREET
APPROXIMATE EXISTING GROUND SURFACE
SIPHON CHAMBERS
ELEVATION IN FEET – BOSTON CITY BASE
20
10
0
-10
-20
33+00
40+00
50+00
42"x 44"(MC) BRICK C.S.
57"x 66" EGG (BRICK) SOUTH BOSTON INTERCEPTOR, NORTH BRANCH
MBTA DORCHESTER AVE. TUNNEL
48" R.C STUB FOR DORCHESTER BROOK DRY WEATHER CONNECTION
96" R.C.
S=0.0006
96" R.C.
S=0.0006
60" R.C. SOUTH BOSTON INTERCEPTOR, NORTH BRANCH CONNECTION
STA.47+00
STA. 47+60
INVERTED SIPHON 1-36", 2-48"
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER
(R) RECTANGULAR


C STREET
DORCHESTER AVENUE
MILHENDER PLACE
MBTA R.R.
CROSS COUNTRY
TRACKS
CROSS COUNTRY
NEW BOSTON FOOD MARKET
APPROXIMATE EXISTING GROUND SURFACE
SIPHON CHAMBERS
MBTA R.R. BRIDGE (OVERPASS)
DORCHESTER BROOK CONDUIT
WIDETT CIRCLE
JUNCTION CHAMBER
2-204"x162"(R) R.C. DORCHESTER BROOK CONDUIT
57"x66" EGG (BRICK) SOUTH BOSTON INTERCEPTOR, NORTH BRANCH
MBTA DORCHESTER AVE. TUNNEL
48" R.C STUB FOR DORCHESTER BROOK DRY WEATHER CONNECTION
92"x78"(R) R.C. CONDUIT
96" R.C.
S=0.0006
96" R.C.
S=0.0004
60" R.C SOUTH BOSTON INTERCEPTOR, NORTH BRANCH CONNECTION
STA. 47+60
STA. 47+00
84" R.C. EAST SIDE INTERCEPTOR REPLACEMENT, NORTH BRANCH
84" R.C. EAST SIDE INTERCEPTOR REPLACEMENT, SOUTH BRANCH
INVERTED SIPHON 1-36", 2-48"
50+00
54+90
60+00
65+70
20
10
0
-10
-20
ELEVATION IN FEET – BOSTON CITY BASE
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER
(R) RECTANGULAR
(H) HORSESHOE
VERT. 0 8 16
HORIZ. 0 200 400
SCALES IN FEET

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)
PROFILE OF
PROPOSED MAIN INTERCEPTOR
REPLACEMENT
STA. 33+00 TO STA. 65+70
Comp Dresser & McKee Inc.
Environmental Engineers
Boston, Massachusetts

FIG. II-I

SHEET 2 OF

at a proposed structure immediately upstream of the entrance of the existing MDC Columbus Park Headworks. The portion of the route from Dorchester Avenue to the connection at the headworks is the same as proposed in the 1967 Report.

It should be noted that the State Department of Public Works is now (1975) resurfacing the section of Old Colony Avenue through which the conduit would be built. The resurfacing operation apparently includes replacing local surface drainage and sewers to provide separate sanitary and storm conduits on each side of the street, and installing a central dividing strip.

The proposed Dorchester Brook Dry Weather Connectionto join the Main Interceptor Replacement west of the railroad bridge, although recommended in the 1967 and 1972 Reports, and eligible for grant aid in 1972, is not included for construction at present. A temporarily closed stub for future connection would be left in the interceptor replacement conduit. The special structure required to contain a regulator and tide gates would be included with the construction at that time.

Connections to the Main Interceptor Replacement would be made from the existing South Boston Interceptor, North Branch at W. 7th St. and Dorchester Avenue, and from segments of the South Branch of the South Boston Interceptor east of Old Colony Avenue.

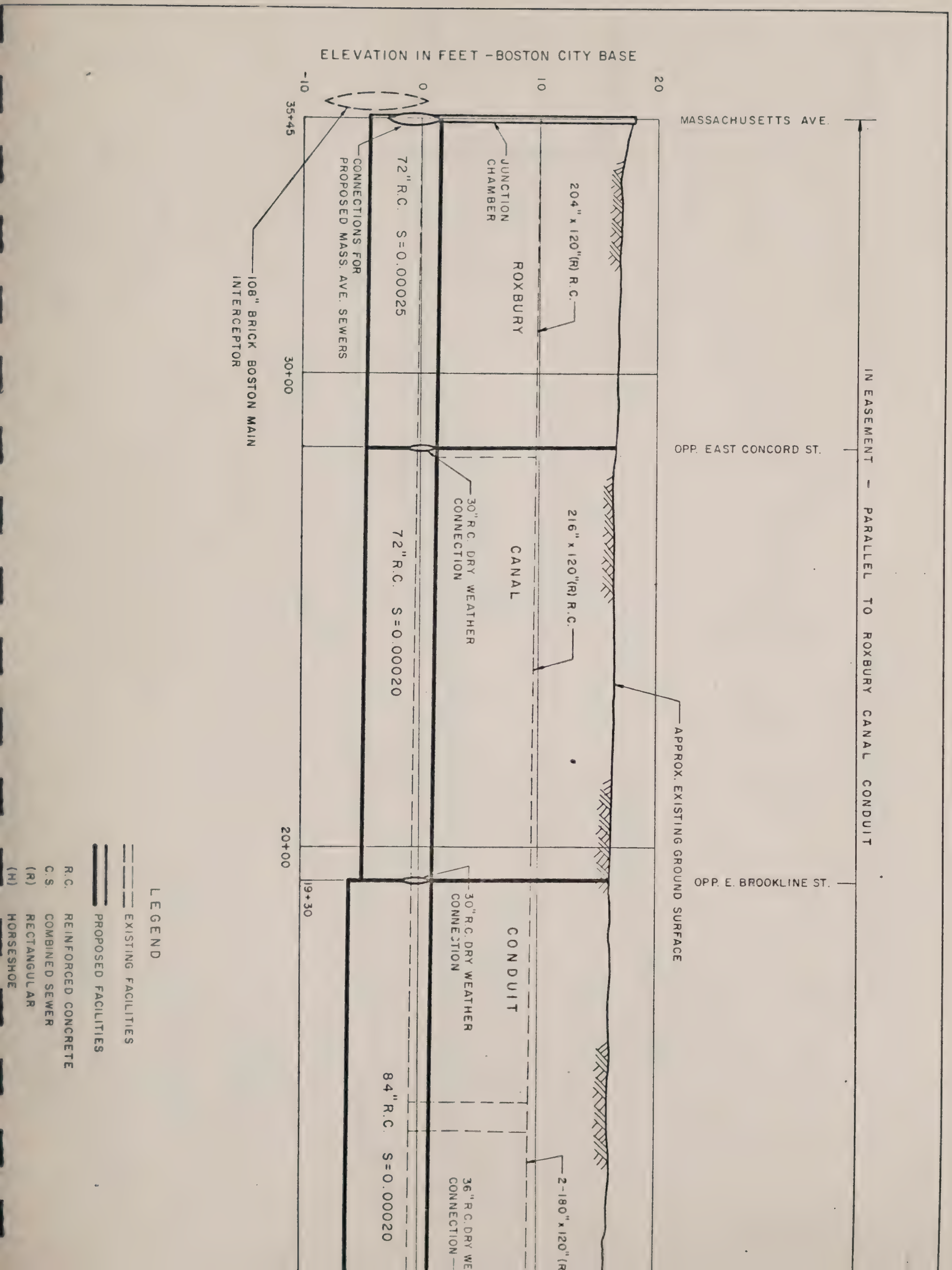
The diameter of the Main Interceptor Replacement is now estimated to be 96-inches and the length is about 6570 feet. The estimated construction costs of the proposed Main Interceptor Replacement is $13,370,000 at ENR Construction Cost Index of 3340, as projected to the price level estimated to prevail in late 1979. This is the level upon which bids might be based if received in mid-1978. The estimated cost includes an allowance for contingencies and engineering of 25%.

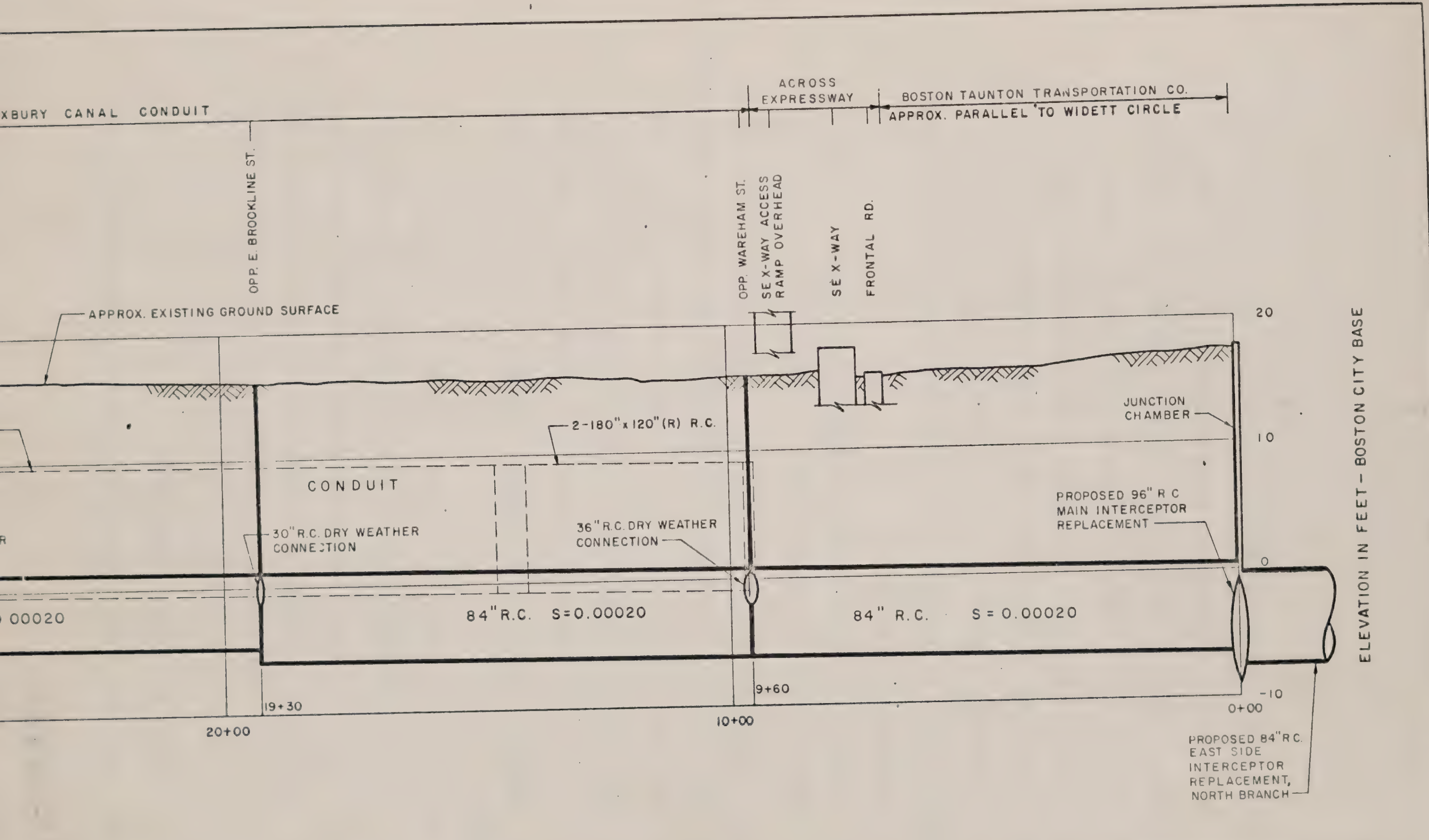
When the conduit is under detailed design and final surveys and subsurface exploration have been made, consideration should be given to possible realignment of the conduit to pass north of the MBTA bridge, crossing the MBTA tracks under the embankment, and thence easterly beneath the freight tracks of the Penn Central Railroad. The passage beneath the embankment would necessarily be done by jacking or possibly by compressed air tunneling. The passage beneath the railroad tracks might be by jacking, continuing the jacking operation, or by open cut methods taking one or more tracks from service at a time replacing them on heavy steel girder supports. This method has been found possible elsewhere for railroad crossings. Present indication from preliminary cost estimates is that the crossing of the MBTA tracks and freight tracks under the bridge west of Milhender Place would be less expensive than the jacking or the possible compressed air tunneling operation and has been selected as the preliminary tentative alignment.

The proposed Main Interceptor Replacement must be constructed before any effective use can be made of capacity to be provided in the proposed South and North Branches of the East Side Interceptor Replacement. The Main Interceptor Replacement thus must be constructed early in the construction program and should be given high priority for surveys, subsurface explorations and design.

Proposed East Side Interceptor Replacement - South Branch

The proposed South Branch of the East Side Interceptor Replacement, (Fig. II-2), would receive flows from existing sewers and from sewers to be constructed in the future in Massachusetts Avenue both north and south of Albany Street. The replacement would also receive flows from connections to the existing East Side Interceptor in Albany Street, including sewers


ELEVATION IN FEET - BOSTON CITY BASE
-10
0
10
20
35+45
30+00
20+00
19+30
MASSACHUSETTS AVE.
OPP. EAST CONCORD ST.
OPP. E. BROOKLINE ST.
IN EASEMENT - PARALLEL TO ROXBURY CANAL CONDUIT
ROXBURY
CANAL
CONDUIT
204" x 120"(R) R.C.
216" x 120"(R) R.C.
2-180" x 120" (R
JUNCTION CHAMBER
72" R.C. S=0.00025
72" R.C. S=0.00020
84" R.C. S=0.00020
CONNECTIONS FOR PROPOSED MASS. AVE. SEWERS
108" BRICK BOSTON MAIN INTERCEPTOR
30" R.C. DRY WEATHER CONNECTION
30" R.C. DRY WEATHER CONNECTION
36" R.C. DRY WE CONNECTION
APPROX. EXISTING GROUND SURFACE
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER
(R) RECTANGULAR
(H) HORSESHOE


XBURY CANAL CONDUIT
ACROSS EXPRESSWAY
BOSTON TAUNTON TRANSPORTATION CO.
APPROX. PARALLEL TO WIDETT CIRCLE
OPP. E. BROOKLINE ST.
OPP. WAREHAM ST.
SE X-WAY ACCESS RAMP OVERHEAD
SE X-WAY
FRONTAL RD.
APPROX. EXISTING GROUND SURFACE
2-180"x120"(R) R.C.
CONDUIT
JUNCTION CHAMBER
30"R.C. DRY WEATHER CONNECTION
36"R.C. DRY WEATHER CONNECTION
PROPOSED 96" R C MAIN INTERCEPTOR REPLACEMENT
00020
84"R.C. S=0.00020
84" R.C. S = 0.00020
19+30
20+00
10+00
9+60
0+00
20
10
0
-10
ELEVATION IN FEET – BOSTON CITY BASE
PROPOSED 84"R.C. EAST SIDE INTERCEPTOR REPLACEMENT, NORTH BRANCH
VERT. 0 8 16
HORIZ. 0 200 400

LEGEND

– – –	EXISTING FACILITIES
═	PROPOSED FACILITIES
R.C.	REINFORCED CONCRETE
C.S.	COMBINED SEWER
(R)	RECTANGULAR
(H)	HORSESHOE

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)
PROFILE OF
PROPOSED EAST SIDE INTERCEPTOR
REPLACEMENT, SOUTH BRANCH
STA. 0+00 TO STA. 35+45
Camp Dresser & McKee Inc.
Environmental Engineers
Boston, Massachusetts

FIG. II-2

built under Site Preparation contracts by the Boston Redevelopment Authority (BRA) for the South End Urban Renewal Area.

The site preparation work includes a contract, Phase II, for the construction of the Union Park Street Pollution Abatement and Flood Control Facility. The facility includes a pumping station which is now being constructed as Phase I. In the future treated and chlorinated combined sewer overflows will be discharged to the existing Roxbury Canal Conduit. The funds requested by BRA (Appendix A) includes requests for the Phase II construction.

Dry weather flow from the Union Park Street area will be connected to the proposed East Side Interceptor Replacement, South Branch. The cost of the dry weather connection from Albany Street at Malden Street to the proposed South Branch is included with the South Branch construction costs.

The proposed East Side Interceptor Replacement, South Branch, would conduct flows from southwest to northeast in a reverse direction to the existing East Side Interceptor segment in Albany Street. A special structure in Massachusetts Avenue would receive flows from proposed connections in Massachusetts Avenue north and south.

Wastewater would be received at the north connection from existing sewers in Massachusetts Avenue including the Roxbury Interceptor and E. Chester Park Sewer, in addition to the recently constructed sewers built by the Public Facilities Department in the vicinity of the Outpatient Department of the Boston City Hospital and capacity would be provided for the discharge from a 36-in sewer in Tremont Street recently constructed by the BRA. Consideration has been given to the effect of future proposed sewers shown on the Site Preparation plans for the South

End Project Area proposed by the BRA as discussed below. These sewers would include a replacement for the E. Chester Park sewer known to be in partially collapsed condition.

The connection to the South Branch Replacement from the south would receive flows from existing combined sewers along Massachusetts Avenue south of Albany Street to the vicinity of Shirley Street. A lift station discussed in detail in our 1967 Report and 1972 Update has been recommended for future construction at this location.

The selected route is south of the Roxbury Canal Conduit rather than north of the conduit as was proposed in 1967, to obtain greater clearance for construction and to avoid buildings recently built north of the conduit. When the South Branch Replacement is designed, consideration should be given to plans which might then be in effect for highway construction in the vicinity of the ramp from Massachusetts Avenue to the Southeast Expressway, and for additional building construction.

The South Branch Replacement would extend northeasterly from the junction chamber in Massachusetts Avenue along the southeast side of the Roxbury Canal Conduit to a point adjacent to the Southeast Expressway north of the exit from the Massachusetts Avenue off ramp. At this point the South Branch Replacement would receive flows from Union Park Street at Malden Street. The interceptor replacement would cross in open cut beneath the elevated section of the off ramp and southbound lane of the Expressway, and by jacking beneath the northbound feeder and northbound lanes and the east side service road to near the present Boston and Taunton Express building, thence south of the building to the junction with the proposed Main Interceptor Replacement.

The conduit sizes in the proposed South Branch Replacement range from 72 inches to 84 inches and the total length is about 3550 ft. The total length of

connecting pipes from dry weather connections at Massachusetts Avenue, E. Concord Street, E. Brookline Street and Union Park Street is about 1530 ft. New or rehabilitated regulators would be required to intercept dry weather flows at each of these connections. New or rehabilitated tide gate structures would be provided where construction of the South Branch Replacement would make them necessary.

The existing storm flow connection from the combined sewer regulator at E. Dedham Street to the Roxbury Canal Conduit has been abandoned because of construction of the Flower Mart Building. A substitute connection for storm flows rejected at the E. Dedham Street regulator must be provided for proper operation of the proposed interceptor replacements. The 42-inch storm drain shown on the BRA South End Project Area site preparation plans to be constructed in E. Brookline Street extended should be restudied and scheduled for early construction to serve this function.

The storm flow connection from the combined sewer regulator at E. Concord Street to the Roxbury Canal Conduit is reported to have been bulkheaded, when tide gates were removed within the last year or so, and to be no longer in service. It would be necessary in the present proposed construction to rehabilitate the E. Concord Street storm flow connection to act as a storm overflow from the regulator at Albany Street.*

The time schedule for construction of the South Branch of the proposed East Side Interceptor Replacement would be based on the consideration that it cannot be put into operation until the proposed Main Interceptor Replacement is in operation. However, completion of the South Branch Replacement must precede

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* We understand that a request has been made of the MDC in this regard.

the construction of sewers in Massachusetts Avenue proposed for future programs.

The estimated cost of the South Branch of the East Side Interceptor Replacement including all connections is about $8,240,000 at ENR Construction Cost Index of 3175, as projected to the price level estimated to prevail in mid-spring of 1979. This is the level upon which bids might be based if received in mid-year of 1978. The estimated cost includes an allowance for pumping at Massachusetts Avenue which is discussed below, and an allowance of 25% for engineering and contingencies.

Effect of BRA Construction in South End Urban Renewal Area

The plan titled "Boston Redevelopment Authority, South End Urban Renewal Area, Recommended Sewer and Drain Systems" prepared for the BRA by Charles A. Maguire and Associates, dated October 1971, and revised to December 1974, indicates that restrictions have been introduced into the approved CDM comprehensive plan of 1967 by the continuing program of construction by the BRA of sewers connected directly to the existing Main Interceptor in Massachusetts Avenue.

The BRA plan shows a recently constructed sanitary sewer extending southwesterly in Tremont Street from near the intersection with Union Park Street, and sanitary sewers proposed to connect to this new Tremont Street sewer from the north and south to serve the westerly portion of the South End Urban Renewal Area. The Tremont Street sewer has been constructed at a low elevation, lower than that of the existing combined sewer at Camden Street to take advantage of the low elevation available in the existing Main Interceptor conduit. The introduction of the Tremont Street sewer requires that the Main Interceptor be retained in service to serve this portion of the urban

renewal area with the provision of a pumping station at Albany Street as discussed below, or, alternatively, that a sanitary sewer be constructed generally southeasterly in Camden Street, Washington Street and Massachusetts Avenue or a parallel street such as Northampton Street to Albany Street to serve this area and to receive connections from the additional sanitary sewers proposed by BRA, as shown on its 1971 plan.

This construction and proposed construction is not compatible with the CDM 1967 Master Plan arrangement because it will reverse the direction of service for sanitary sewerage in the South End District. The 1967 CDM report approved by the State DWPC and the 1972 Update of that report both were based on the continuing passage of sewage generally easterly and southeasterly from the South End District to enter the proposed East Side Interceptor Replacement, South Branch at the several regulators at Union Park Street, E. Dedham Street, E. Concord Street and Massachusetts Avenue. The BRA divergence from the 1967 Report plan places a heavier burden on the southwest end of the South Branch of the East Side Replacement, requiring an increase in capacity in that section, because of rerouting of the sewage flow generally southwesterly and thence back northeasterly to the Main Interceptor Replacement.

In addition, local sanitary sewers and storm drains proposed for construction by the BRA in E. Concord Street, E. Newton Street, E. Brookline Street, E. Canton Street, E. Dedham Street and Plympton Street all are shown to connect directly to the existing East Side Interceptor without regulators and may be at gradients steeper than those of the existing combined sewers in some of those streets. The combined sewers now connect to the East Side Interceptor through regulators and thus are higher than the existing interceptor at the Albany Street junction points.

A possible alternative is to divert the Tremont Street Sewer to the Ward Street Headworks, and provide a sanitary sewer with adequate capacity for peak dry weather flow from connections downstream of Tremont Street and along Camden Street, Washington Street and Massachusetts Avenue to a connection with East Side Interceptor Replacement, South Branch. The Main Interceptor would then be available as a relief sewer during emergency or at times when the headworks at Columbus Park and Ward Street are inadequate.

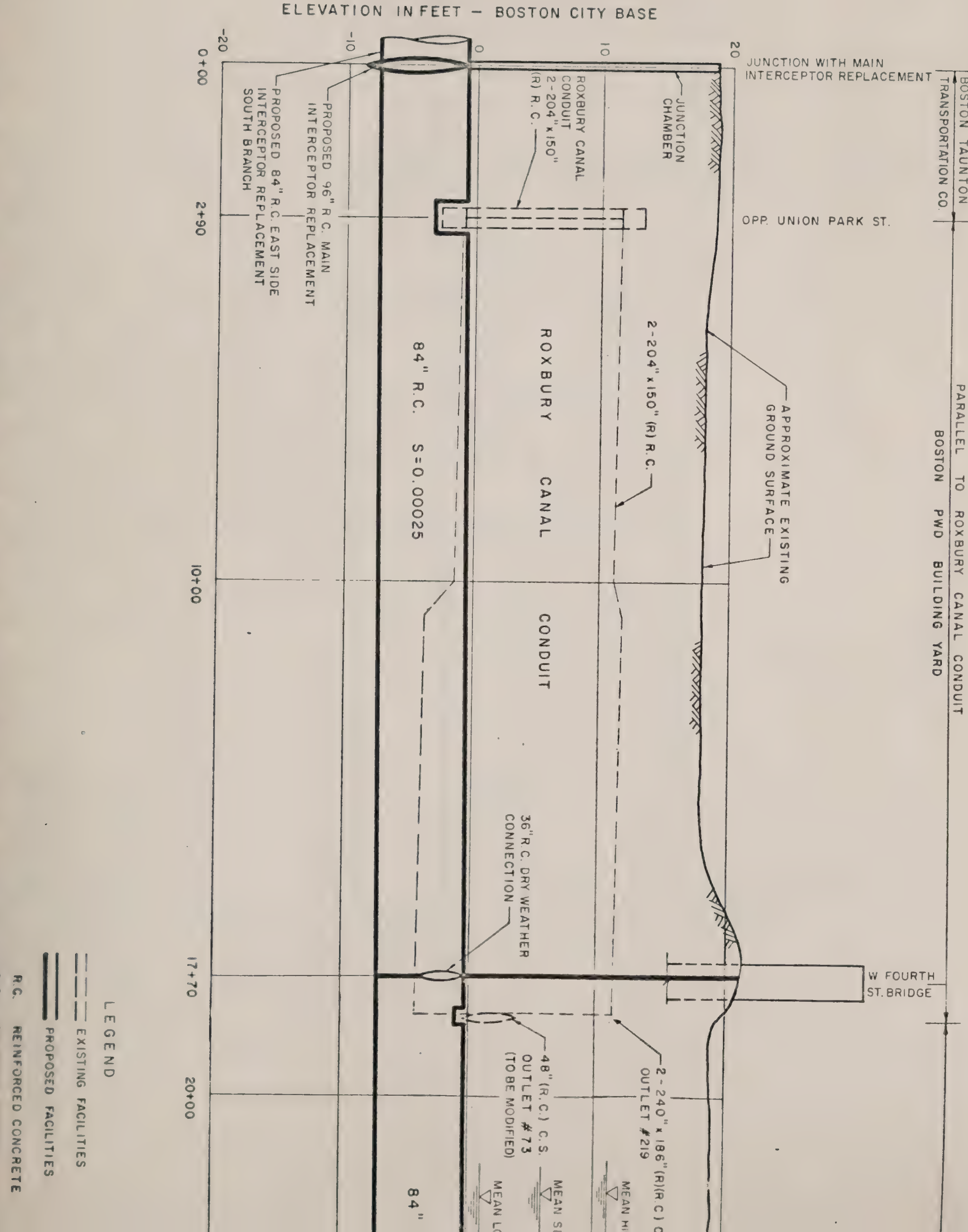
If the section of the Main Interceptor from Tremont Street to south of Albany Street is retained in service, as an outlet for sanitary wastewater from the new Tremont Street sewer and connections to the Main Interceptor along the way, but with abandonment of the portion of the Main Interceptor southeasterly toward the MDC Columbus Park connection because of structural failure or otherwise, it may be necessary to provide pumping at the upper end of the proposed East Side Interceptor Replacement, South Branch. The invert of the existing Main Interceptor is too low at this point for gravity flow to the East Side Interceptor Replacement. An allowance is included in the estimated cost for such a pumping station.

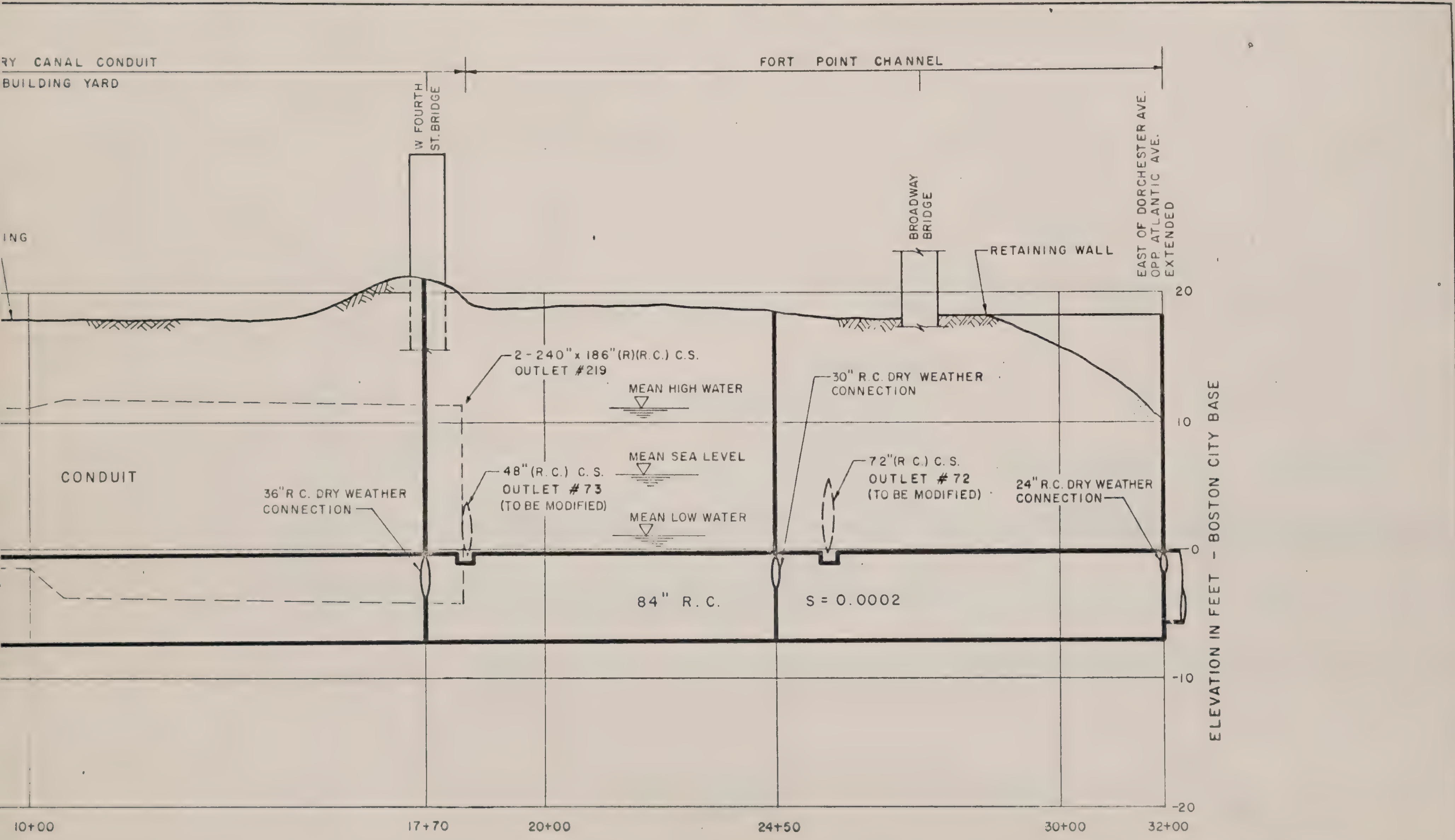
East Side Interceptor Replacement - North Branch

The proposed North Branch of the East Side Interceptor Replacement Fig. II-3 (3 sheets), would be constructed from an existing junction chamber on Atlantic Avenue at High Street extending generally south to the proposed Main Interceptor Replacement at the proposed junction chamber in the Food Mart area. At its northern end the branch interceptor replacement would connect at a 66" stub left for that purpose at a junction with the newly reconstructed portion of the East Side Interceptor near High Street in Atlantic Avenue.

The Interceptor Replacement would extend southerly in Atlantic Avenue to an alley north of the Appraisers Building and thence easterly to the channel.

The alignment of the proposed interceptor replacement between Atlantic Avenue and Northern Avenue should be coordinated with the plans which may or may not now be active for the extension of Atlantic Avenue - Dorchester Avenue south across the Fosters Wharf area and for the construction of a highway bridge near Northern Avenue across Fort Point Channel into South Boston. Work is to be undertaken shortly, we understand, for the reconstruction of the Northern Avenue Bridge, possibly as a single span on the southeast side of the Fort Point Channel extending to a newly constructed filled approach which would extend about halfway across the channel opening. The plan for the extension of a Atlantic Avenue - Dorchester Avenue auxiliary route southeast of the granite bulkhead wall along the northwest side of Fort Point Channel connecting to an extension of Atlantic Avenue north of Northern Avenue Bridge appears to be no longer active but this should be checked before final alignment is designed. The alignment north of the Appraisers Store Building is recommended to avoid a narrow, pipe-filled section of Atlantic Avenue just north of Northern Avenue.


ELEVATION IN FEET – BOSTON CITY BASE
-20
-10
0
10
20
0+00
2+90
10+00
17+70
20+00
JUNCTION WITH MAIN INTERCEPTOR REPLACEMENT
BOSTON TAUNTON TRANSPORTATION CO.
JUNCTION CHAMBER
ROXBURY CANAL CONDUIT 2-204" x 150" (R) R.C.
PROPOSED 96" R.C. MAIN INTERCEPTOR REPLACEMENT
PROPOSED 84" R.C. EAST SIDE INTERCEPTOR REPLACEMENT SOUTH BRANCH
OPP. UNION PARK ST.
PARALLEL TO ROXBURY CANAL CONDUIT
BOSTON PWD BUILDING YARD
APPROXIMATE EXISTING GROUND SURFACE
2-204" x 150" (R) R.C.
ROXBURY CANAL CONDUIT
84" R.C. S=0.00025
36" R.C. DRY WEATHER CONNECTION
W FOURTH ST. BRIDGE
2-240" x 186" (R)(R.C.) C
OUTLET #219
48" (R.C.) C.S. OUTLET #73 (TO BE MODIFIED)
MEAN HI
MEAN SE
MEAN LO
84"
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER
(R) RECTANGULAR


RY CANAL CONDUIT
BUILDING YARD
ING
W FOURTH ST. BRIDGE
FORT POINT CHANNEL
BROADWAY BRIDGE
RETAINING WALL
EAST OF DORCHESTER AVE. OPP. ATLANTIC AVE. EXTENDED
2-240" x 186" (R)(R.C.) C.S. OUTLET #219
MEAN HIGH WATER
MEAN SEA LEVEL
MEAN LOW WATER
30" R.C. DRY WEATHER CONNECTION
CONDUIT
36" R.C. DRY WEATHER CONNECTION
48" (R.C.) C.S. OUTLET #73 (TO BE MODIFIED)
72" (R.C.) C.S. OUTLET #72 (TO BE MODIFIED)
24" R.C. DRY WEATHER CONNECTION
84" R.C.
S = 0.0002
20
10
0
-10
-20
ELEVATION IN FEET - BOSTON CITY BASE
10+00
17+70
20+00
24+50
30+00
32+00

LEGEND

— — — EXISTING FACILITIES

━━━ PROPOSED FACILITIES

R.C. REINFORCED CONCRETE

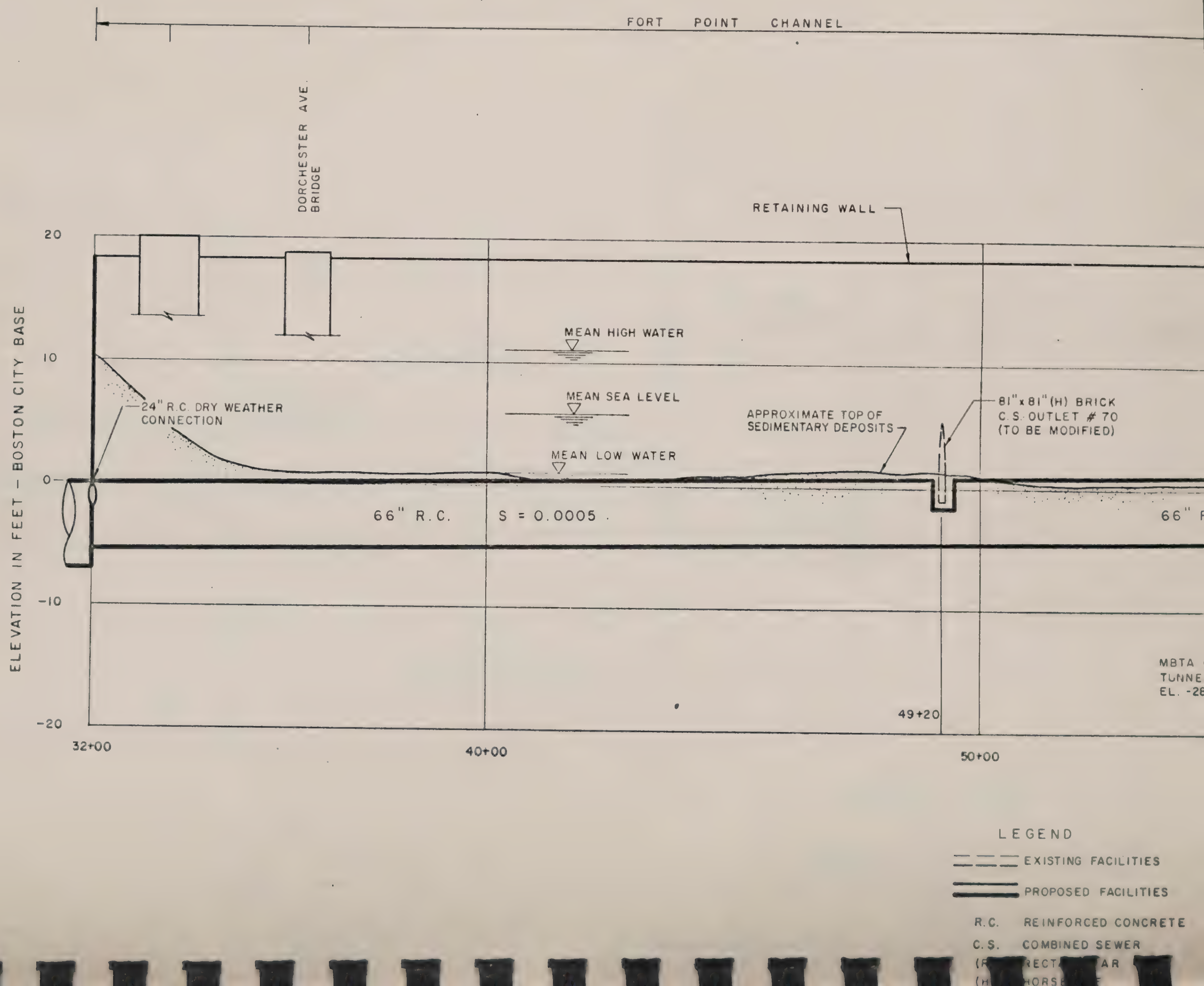
C.S. COM ED SE

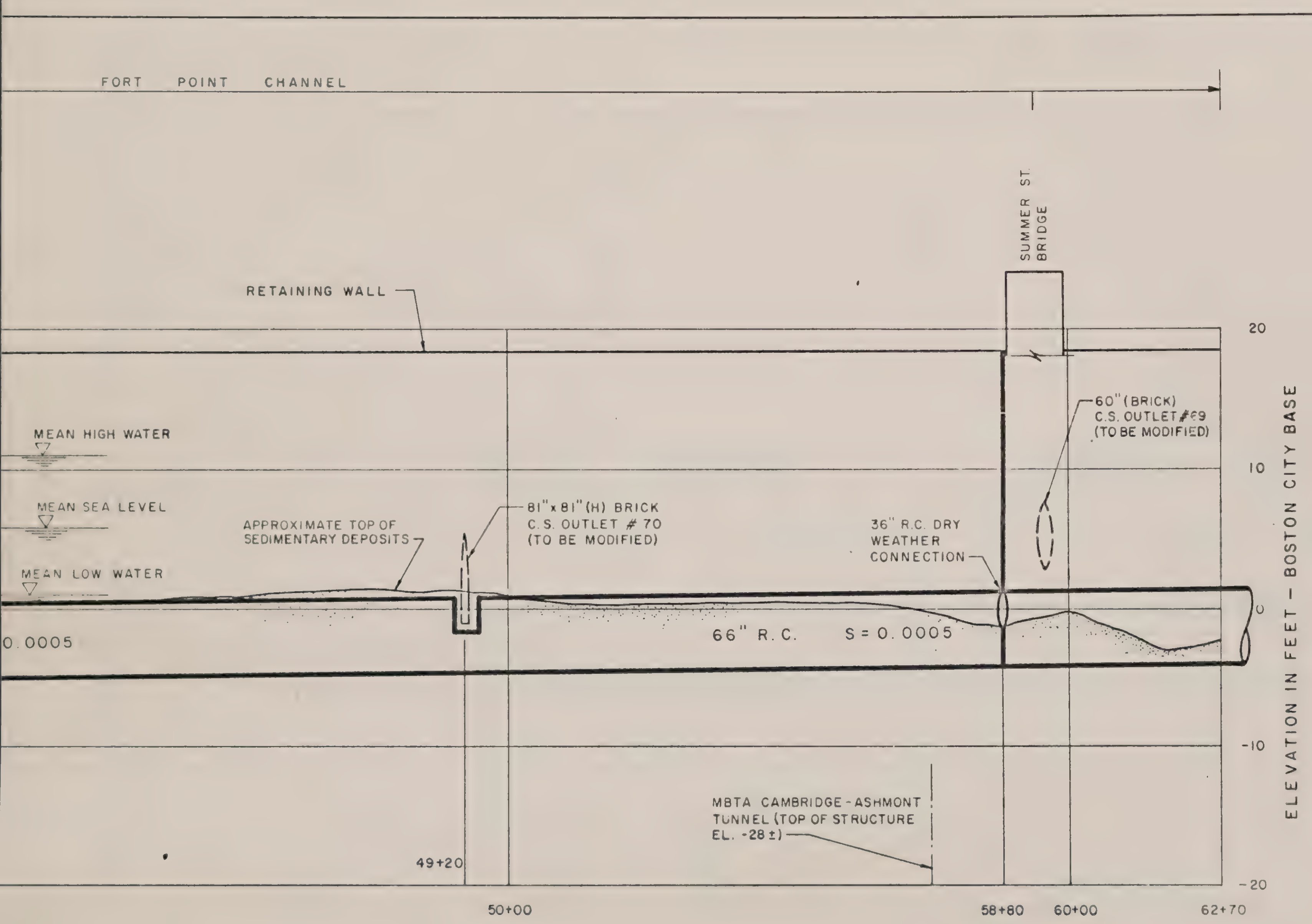
RE ULAR

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)

PROFILE OF
PROPOSED EAST SIDE INTERCEPTOR
REPLACEMENT, NORTH BRANCH
STA. 0+00 TO STA. 32+00

Comp Dresser & McKee Inc.
Environmental Engineers
Boston, Massachusetts


FORT POINT CHANNEL
DORCHESTER AVE. BRIDGE
RETAINING WALL
ELEVATION IN FEET – BOSTON CITY BASE
20
10
0
-10
-20
MEAN HIGH WATER
MEAN SEA LEVEL
MEAN LOW WATER
24" R.C. DRY WEATHER CONNECTION
APPROXIMATE TOP OF SEDIMENTARY DEPOSITS
81"x81"(H) BRICK C.S. OUTLET # 70 (TO BE MODIFIED)
66" R.C.
S = 0.0005
66"
MBTA
TUNNE
EL. -28
32+00
40+00
49+20
50+00
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER
RECT AR
HORS


FORT POINT CHANNEL
SUMMER ST. BRIDGE
RETAINING WALL
MEAN HIGH WATER
MEAN SEA LEVEL
MEAN LOW WATER
APPROXIMATE TOP OF SEDIMENTARY DEPOSITS
81"x81"(H) BRICK C.S. OUTLET # 70 (TO BE MODIFIED)
36" R.C. DRY WEATHER CONNECTION
60"(BRICK) C.S. OUTLET #69 (TO BE MODIFIED)
0.0005
66" R.C.
S = 0.0005
MBTA CAMBRIDGE-ASHMONT TUNNEL (TOP OF STRUCTURE EL. -28±)
49+20
50+00
58+80
60+00
62+70
20
10
0
-10
-20
ELEVATION IN FEET - BOSTON CITY BASE

LEGEND

— — — EXISTING FACILITIES

━━━ PROPOSED FACILITIES

R.C. REINFORCED CONCRETE

C.S. COMBINED SEWER

(R) RECTANGULAR

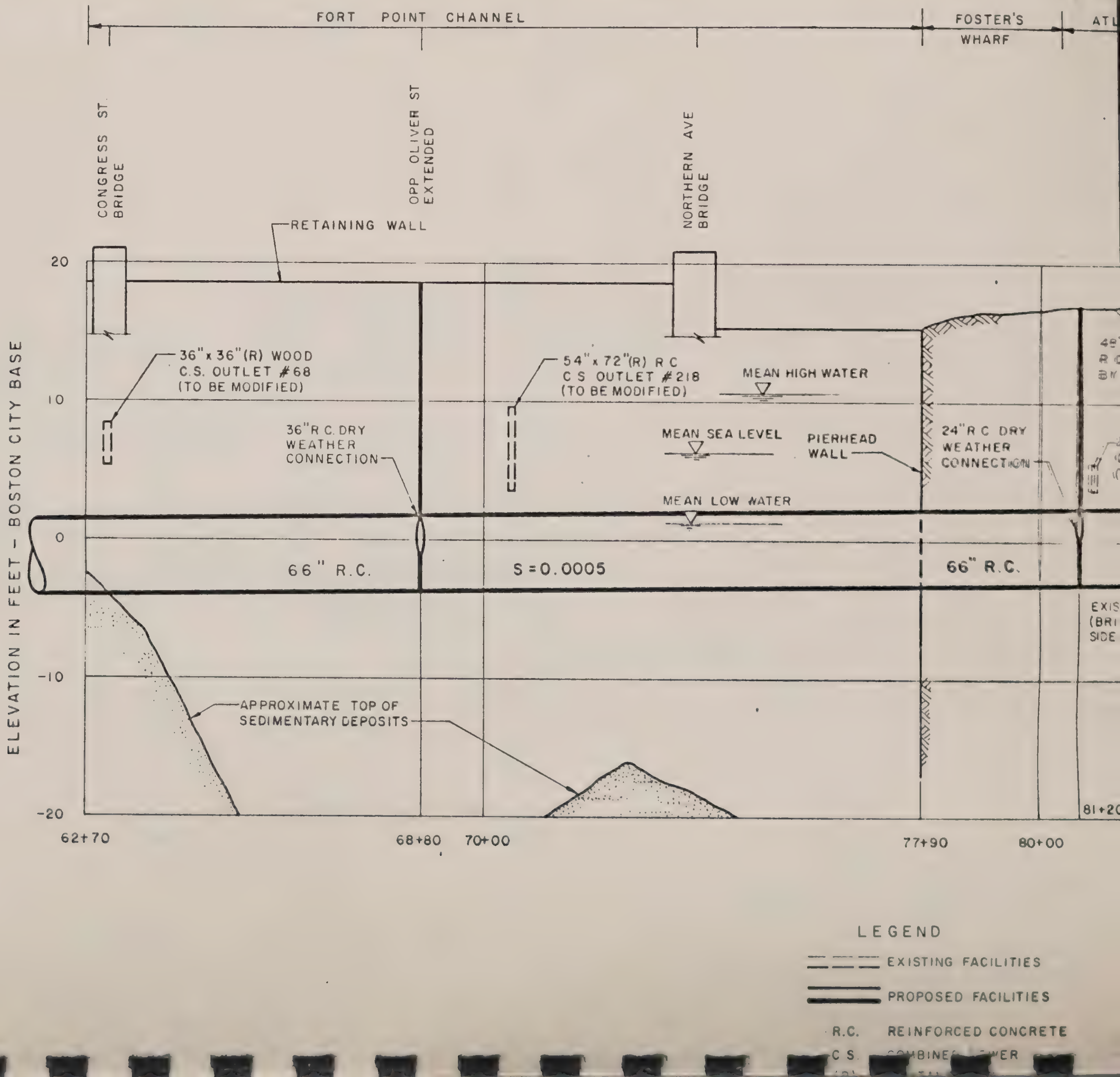
(H)

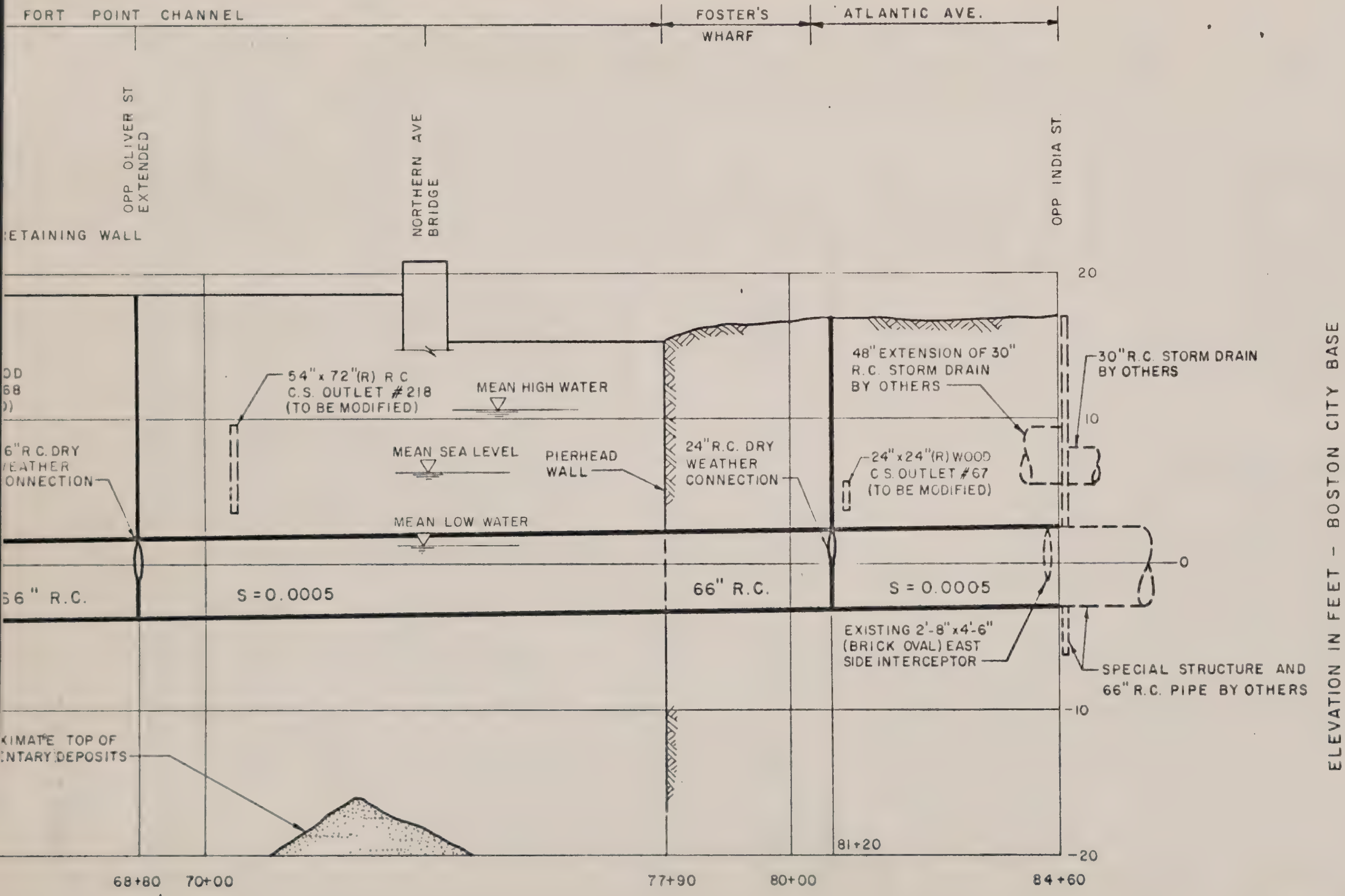
VERT. 0 8 16

HOR 200 400

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)
PROFILE OF
PROPOSED EAST SIDE INTERCEPTOR
REPLACEMENT, NORTH BRANCH
STA.32+00 TO STA. 62+70
Camp Dresser & McKee Inc.
Environmental Engineers
Boston, Massachusetts

FIG. II-3


FORT POINT CHANNEL
FOSTER'S WHARF
CONGRESS ST. BRIDGE
OPP OLIVER ST EXTENDED
NORTHERN AVE BRIDGE
RETAINING WALL
36"x 36"(R) WOOD C.S. OUTLET #68 (TO BE MODIFIED)
54"x 72"(R) R C C S OUTLET #218 (TO BE MODIFIED)
MEAN HIGH WATER
36"R C. DRY WEATHER CONNECTION
MEAN SEA LEVEL
PIERHEAD WALL
24"R C DRY WEATHER CONNECTION
MEAN LOW WATER
66" R.C.
S =0.0005
66" R.C.
APPROXIMATE TOP OF SEDIMENTARY DEPOSITS
ELEVATION IN FEET – BOSTON CITY BASE
20
10
0
-10
-20
62+70
68+80
70+00
77+90
80+00
81+20
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C S. COMBINED SEWER



LEGEND

- – – – EXISTING FACILITIES
- ━━━ PROPOSED FACILITIES
- R.C. REINFORCED CONCRETE
- C.S. COMBINED SEWER

VERT. 0 8 16

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)
PROFILE OF

PROPOSED EAST SIDE INTERCEPTOR REPLACEMENT, NORTH BRANCH

STA. 62+70 TO STA. 84+60
Camp Dresser & McKee Inc.
Environmental Engineers
Boston, Massachusetts

The alignment between Atlantic Avenue and the Channel is subject to revision to suit conditions existing when design is undertaken. A hotel is proposed in the Foster's Wharf area which is now occupied by a building south of the wharf.

The Interceptor Replacement would extend in the channel, adjacent to the northwest bulkhead wall, southwesterly beneath the Northern Avenue Bridge, the Congress Street Bridge, and the Summer Street Bridge to the Dorchester Avenue Bridge. The conduit would be constructed adjacent to the west bank of the channel beneath the now unused Dorchester Avenue Bridge and the Penn Central Railroad Bridges. Thence the Interceptor Replacement would extend southwesterly adjacent to the northwest and west bank of the Channel, beneath the Broadway Bridge, now permanently fixed in place, thence southerly along the west shore and on the shore in the existing sloping open space to the embankment at the 4th Street Bridge immediately northwest of the existing Roxbury Canal Conduit. From this point the conduit would extend southerly beneath the embankment and in the space between the recently constructed Public Works Department maintenance buildings and the Southeast Expressway marginal road to a point opposite Union Park Street if extended, thence southeasterly to a junction with the Main Interceptor Replacement east of the Boston and Taunton Express terminal building. There it would be joined by the South Branch of the East Side Interceptor Replacement.

The alignment from High Street southerly to near the Dorchester Avenue Bridge is almost the same as in the 1972 report, but varies from the route in the 1967 report, which was onshore through railroad yards northwest of the granite bulkhead wall. The recommended change in alignment in 1972 to a location in the channel area itself is made to avoid construction onshore through the existing railroad yards north of the channel from west of Dorchester Avenue to and south of the Postal Annex

Building at the north end of the lift bridges and to avoid construction beneath the existing granite sea walls and walls of an abandoned ramp to the lower level of the South Station. The alignment southeast of the bulkhead wall would also avoid crossings of the existing East Side Interceptor which might or might not have been replaced by a temporary interceptor replacement, discussed below.

Construction in the unused waterway of the channel would require no more handling of water than would be required for construction in open trench construction onshore which would be in water-bearing soft material below low tide level adjacent to the channel.

Several of the connections from existing combined sewers are proposed to be made by abandoning the existing regulators and tidegates (in some cases located at a distance back from Fort Point Channel) and providing new regulator structures with tidegates at the present outlets of the existing combined sewer overflows. In these cases flows would be directed from the former regulators into the storm water overflow conduits and dry weather flow would be diverted to the Interceptor Replacement at the proposed regulator structures. In other cases this cannot be done and the existing regulators would be rehabilitated and dry weather connections extended from the regulator to the proposed North Branch Interceptor Replacement. In some instances the provision of new tidegates would be necessary to avoid salt water entry into the regulator structures and would be provided as required.

The North Branch Replacement would receive dry weather flows at High Street (Melcher Lane)(NPDES Outlet No. 061); at a point opposite Oliver Street (Outlet No. 062); at Summer Street (Outlet No. 064)*; at Atlantic Avenue, extended (west of Dorchester Avenue and the railroad bridges)

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* Outlet No. 063 would be discontinued.

(unnumbered);** north of Traveler Street (formerly Troy Street)(Outlet No. 068); and at E. Berkeley Street (Outlet No. 069). The unnumbered connection west of the railroad bridges would serve regulators at Beach Street and Kneeland Street, through the conduit to be constructed by BRA for interim use as a substitute for the section of the existing East Side Interceptor to be removed for the construction of a bus terminal, as discussed hereinafter.

The barrel of certain portions of the existing North Branch of the East Side Interceptor between Atlantic Avenue and Union Park Street would be abandoned and refilled with suitable material to avoid possible future collapse as discussed elsewhere in this report. However certain selected sections of the existing interceptor will probably be required to be kept in operation, if in suitable physical condition, to act as combined sewers or in some cases as separate sanitary sewers under changes to the sewer system being made by the BRA. The cost of filling would not be eligible for grant aid, and is not included in the estimated cost of the replacement conduits and connections.

The Interceptor Replacement would have a diameter of 66" from High Street to the dry weather connection structure west of the railroad bridges west of Dorchester Avenue, and thence 84" to the connection to the Main Interceptor Replacement. The total length of the Interceptor Branch is about 8460 ft and the total length of the connecting pipes is about 1750 ft. The length of connections is greater than that indicated in the 1972 Report because of the necessity for a dry weather connection extending in Summer Street from Dewey Square to the Interceptor Replacement.

The BRA has under construction a bus terminal in the railroad yard southwest of the South Station terminal. This will necessitate the construction of a temporary interceptor replacement by BRA from the existing East Side

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** Outlet No. 065, opposite Kneeland Street would not be connected to the interceptor replacement, and Outlet No. 067 is a separate storm drain outlet.

Interceptor near Beach Street passing and collecting flow from the Kneeland Street sewer and extending thence southwesterly to join the existing East Side Interceptor west of the railroad bridges. The section of the East Side Interceptor thus cut off would be abandoned to make available the area for construction of a bus terminal by BRA. When the North Branch Replacement is constructed, a connection will be provided from the point of junction of the temporary replacement at the existing East Side Interceptor to extend southerly beneath the sea wall to join the proposed Interceptor Branch in the Fort Point Channel . The present outlet of the Kneeland Street stormwater overflow at Outlet No. 065 would be extended across the proposed conduit to discharge to the Channel.

Much of the construction work can be conducted from barges. Portions of the channel along the proposed alignment will be dredged to insure proper grade. North of the Dorchester Avenue Bridge, the pipe will be laid near the existing bulkhead wall. The existing bulkhead will be reinforced, if necessary, with wall anchors to insure against collapse or displacement during dredging and pile driving operations. The pipe will be supported in a cradle on a platform supported by piles. Fill material and riprap will cover the pipe minimizing its visual impact at low tide. The North Branch Replacement could be put into operation as soon as the Main Interceptor Replacement is completed.

At present there is a 30" storm drain connected to the junction chamber at High Street at the junction of the existing East Side Interceptor and the new section of the Interceptor recently built as part of the Downtown Waterfront Urban Renewal Area work. The 30" drain will be intercepted and its connection removed from the junction chamber by others before the East Side Interceptor Replacement is completed.

The separation program underway by BRA in the South Cove Area from plans prepared by Charles T. Main Inc. would ultimately result in a separate storm drainage system and a separate sanitary sewerage system in this area. Parts of the work have been completed and portions of it are in the area in which requests for construction grants are being made. Both the storm drainage and sanitary sewerage systems, however, are brought together in a common manhole just west of the Central Artery and cross beneath the Artery and enter the Kneeland Street regulator in a 72-in combined sewer. Thus, of course, the effect of separation in the South Cove area is now of no advantage to reduce combined sewage overflows from the Kneeland Street overflow. Contracts for work in the South Cove Area are included in the request for funds by BRA appended hereto as Appendix B.

The BRA's consultant, Schoenfeld Associates, Inc., informed us that separation in the Downtown Waterfront Urban Renewal Area is about 98% complete except for the several sanitary sewers for which funds are requested by BRA. All new construction in the area has been made with separated plumbing in the buildings leading to separate storm and sanitary pipes in the street and that only a few buildings with unseparated plumbing remain along State Street. The former combined system in the Waterfront Area has been separated by the construction either of new sanitary sewers utilizing the former combined sewers as storm drains or by the construction of new storm drains utilizing the old combined sewers as sanitary sewers. However in many cases both new sanitary sewers and storm drains have been required and have been provided under the Downtown Waterfront Urban Renewal Area site preparation contracts. Contracts for the several remaining sanitary sewers are included in the request for funds by BRA appended hereto as Appendix C .

The area north of the Downtown Waterfront Urban Renewal Area, the North

End, has not been separated but all connections to the existing East Side Interceptor as it extends north through that area enter the interceptor through regulators so that only dry weather flow, or the dry weather flow equivalent during storm periods, would enter in that section.

The Central Business District adjacent to the Downtown Waterfront District on the southwest and west is not separated and apparently is not planned to be separated for some time. The separation plans for this district were prepared in 1966 and 1967 by Charles T. Main, Inc.

The Downtown Waterfront consultant states that regulator chambers (or so-called "overflow chambers") are provided at the periphery of the Downtown Waterfront area for flows from the adjacent areas. This is explained in a letter of January 22, 1975 as follows:

> "Where the waterfront abuts another area such as the central business district, the Government Center or the North End the following procedures were followed: within the waterfront the systems were separated, where the waterfront abutted one of the other projects and received combined flows from the other project, an overflow chamber was provided. In this manner the storm and sanitary flows were separated in the waterfront and provisions are made to service abutting projects and to enable these projects to separate flows at a later date."

From this it would appear that in some cases, the so-called storm drains are now functioning in reality as mixed stormwater and sanitary wastewater overflow conduits.

Sewers and drains in the Government Center Area have been constructed on the separate system, with separate pipes brought down the east slope of Beacon Hill and connected to the upper ends of the Downtown Waterfront separated sewers and drains.

The cost of the North Branch of the East Side Interceptor Replacement, including all connections is estimated to be about $32,590,000 at ENR

Construction Cost Index of 3340, as projected to the price level estimated to prevail in mid-Fall of 1979. This is the level upon which bids might be based if received in mid-year, 1978.

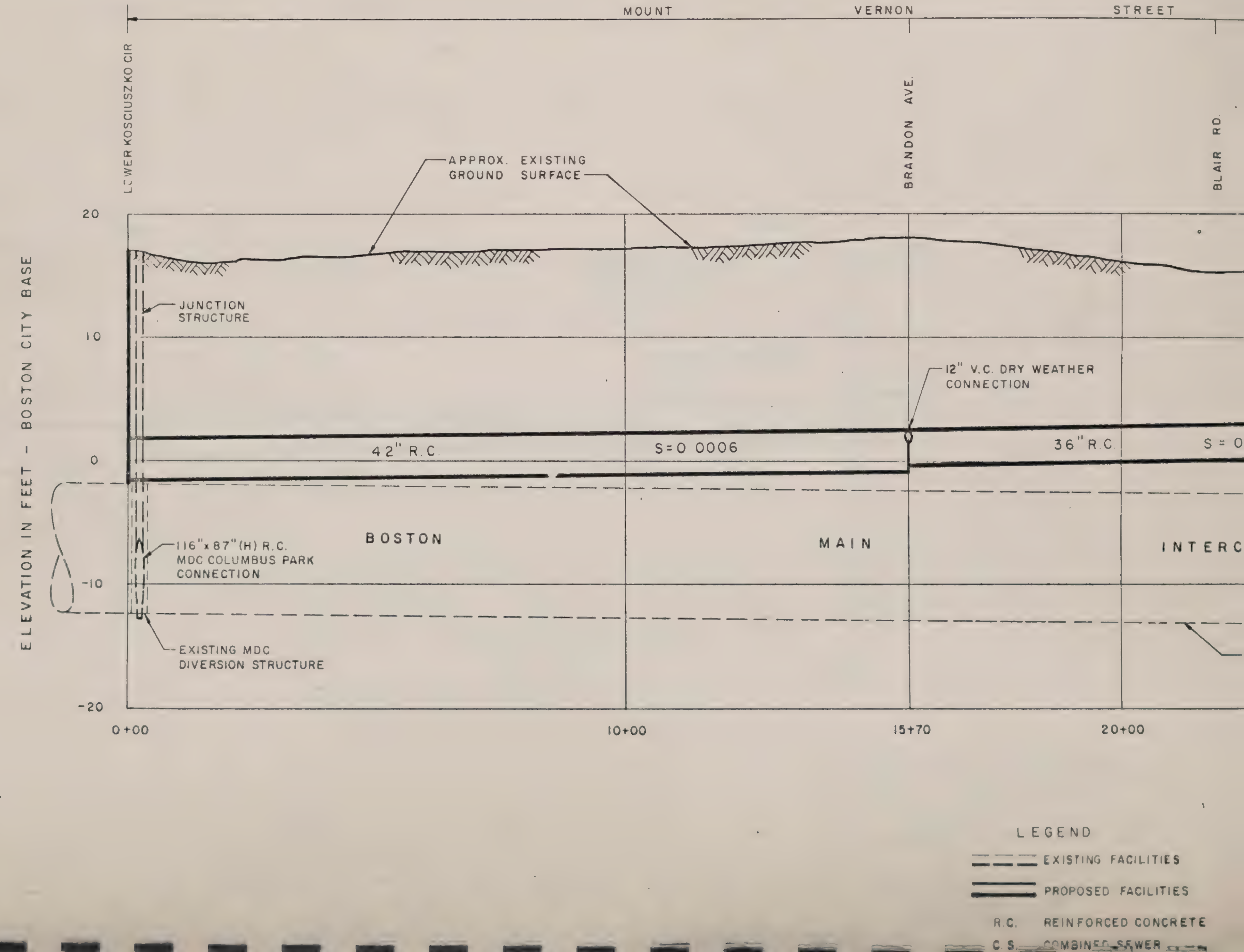
Mt. Vernon Street Sewer

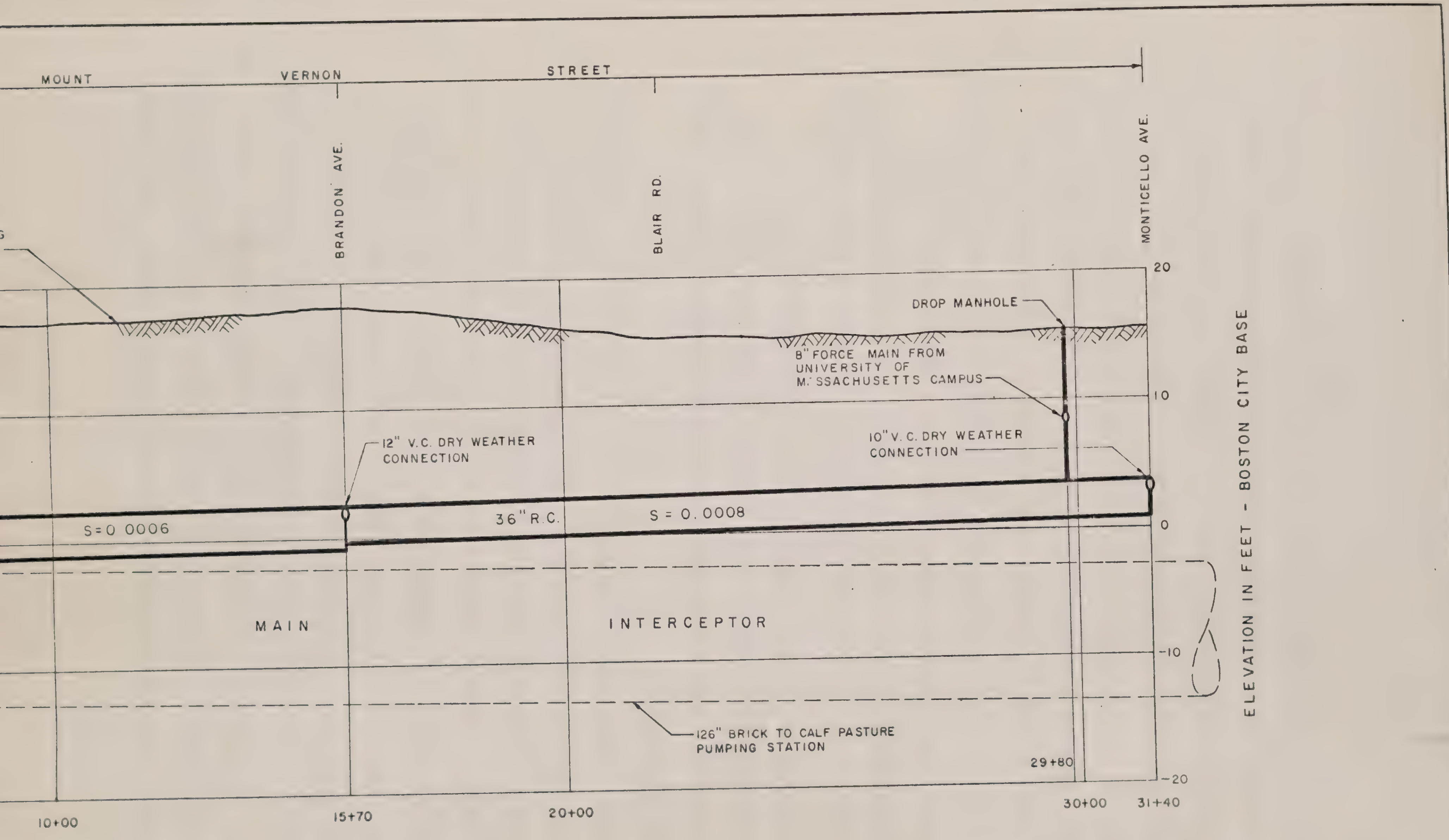
The proposed Mt. Vernon Street sewer, Figure II-4, extends from the easterly end of the Columbia Point Housing project near the Calf Pasture Pumping Station to the existing MDC Diversion Chamber at the junction of the MDC Columbus Park Connection and the existing Main Interceptor. The sewer would be designed to carry only sanitary flows.

This sewer is urgently needed to provide sanitary sewerage facilities to serve the existing Columbia Point Housing Project, the University of Massachusetts, other adjacent public buildings and a commercial area east of Kosciuszko Circle. Sanitary and storm flows now discharge to the Mt. Vernon Street portion of the Main Interceptor from the housing project area, discharging northwesterly, in direction opposite to the invert slope of the Interceptor to the Diversion Chamber at the Columbus Park connection.

Because of the adverse gradient and lack of outlet from the Main Interceptor at its easterly end when Calf Pasture Pumping Station is not operating, the wastewater is required to stand in the large conduit until sufficient gradient is developed to cause flow northwesterly into the Columbus Park Connection. As a result a large volume of stagnant sewage and sludge standing in this portion of the Interceptor barrel is sluiced out into the harbor each time the Calf Pasture Pumps are operated in heavy storm flow situations.

The schedule for the construction of this sewer is independent of the schedule for the other items of construction. Because of the need, however, to eliminate the flow of sanitary wastewater into either the backed-up Main Interceptor or to Calf Pasture for subsequent discharge to the harbor, the Mt. Vernon Street Sewer has top priority from the State and Federal government.


MOUNT VERNON STREET
LOWER KOSCIUSZKO CIR
BRANDON AVE.
BLAIR RD.
ELEVATION IN FEET - BOSTON CITY BASE
20
10
0
-10
-20
0+00
10+00
15+70
20+00
APPROX. EXISTING GROUND SURFACE
JUNCTION STRUCTURE
12" V.C. DRY WEATHER CONNECTION
42" R.C.
S=0 0006
36" R.C.
S = 0
BOSTON
MAIN
INTERC
116"x87"(H) R.C. MDC COLUMBUS PARK CONNECTION
EXISTING MDC DIVERSION STRUCTURE
LEGEND
EXISTING FACILITIES
PROPOSED FACILITIES
R.C. REINFORCED CONCRETE
C.S. COMBINED SEWER


MOUNT VERNON STREET
BRANDON AVE.
BLAIR RD.
MONTICELLO AVE.
DROP MANHOLE
8" FORCE MAIN FROM UNIVERSITY OF MASSACHUSETTS CAMPUS
12" V.C. DRY WEATHER CONNECTION
10" V.C. DRY WEATHER CONNECTION
S=0 0006
36" R.C.
S = 0.0008
MAIN
INTERCEPTOR
126" BRICK TO CALF PASTURE PUMPING STATION
29+80
10+00
15+70
20+00
30+00
31+40
20
10
0
-10
-20
ELEVATION IN FEET - BOSTON CITY BASE

LEGEND

R.C. REINFORCED CONCRETE

C.S. COMBINED SEWER

CITY OF BOSTON, MASSACHUSETTS
1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)

PROFILE OF
PROPOSED MT. VERNON ST.
SEWER
STA. 0+00 TO STA. 31+40

Camp Dresser & McKee Inc.
Environmental Engineers
Boston, Massachusetts

FIG. II-4

The sewer would extend northwesterly about 3140 ft in Mt. Vernon Street from near the east end of Monticello Avenue to the existing Main Interceptor immediately upstream (i.e., west) of the existing MDC Diversion Chamber. The pipe sizes are 36" and 42". The existing separate sanitary sewers and storm drains now serving the Columbia Point housing development discharge to combined sewer manholes north of Mt. Vernon Street on the project property at Monticello Avenue and at Brandon Avenue. From these manholes, combined sewers extend to manholes on the existing Main Interceptor. Sanitary sewer connections are proposed from proposed manholes on the existing sanitary sewers upstream of the combined sewer manholes to the proposed Mt. Vernon Street Sewer. The University force main would be connected to the proposed Mt. Vernon Street sewer.

Storm drainage from the housing development and surface drainage from Mt. Vernon Street catch basins would continue to enter the existing Main Interceptor from Mt. Vernon Street until new storm drainage facilities would be constructed as discussed hereinbelow. To prevent stormwater from discharging through the existing Interceptor in a northwesterly direction to the existing MDC Diversion Chamber and thence to the Columbus Park Headworks, and prevent flow from west of the Diversion Chamber from entering the downstream section except under emergency overflow conditions until other measures are taken, a gate structure would be provided on the Interceptor on the east side, i.e., downstream side of the Diversion Chamber. Storm flow entering this portion of the existing Interceptor downstream of the diversion chamber should be pumped as an interim measure at Calf Pasture Pumping Station and discharged through the existing overflow outlet to the harbor at Calf Pasture point. This use of the section of the

Main Interceptor east of the Diversion Chamber for receipt of local storm water runoff from the many small rainstorms is based on the assumption that overflow would take place from the system near the Ward Street shaft Headworks or be rejected from the Columbus Park Headworks only under emergency conditions.

A discussion of the need for storm drainage in Mt. Vernon Street is given on page 14 of our September 30, 1972 update of the Boston Sewer Report. This is not eligible for grant aid.

The proposed gate downstream of the MDC Diversion Chamber would be so arranged that it would open automatically when required to relieve emergency discharge there and to permit flow easterly to the Calf Pasture Pumping Station for relief pumping as is now practiced. The gate structure would be designed to incorporate a bascule gate or similar apparatus as the hydraulic control element. In our 1972 studies an inflatable fabric dam was recommended as the hydraulic control element and would be ideally suited for this purpose. However, it now appears that the inflatable fabric dam is no longer commercially manufactured and special manufacture of such an item would be prohibitively expensive. An inflatable dam of this type has the advantage of the closing and opening of the waterway under automatic control when the water level on the upstream side exceeds a critical elevation. A sluice gate might be provided instead with a pneumatic, hydraulic or electric operator, but a positive auxiliary or secondary power supply would be required to provide backup for positive opening of the gate under emergency conditions. The bascule gate can be arranged to open automatically under emergency conditions when the surcharge on the upstream side exceeds a critical quantity. Only the closing of the gate then would be dependent

on the auxiliary power supply. The closing of the gate would not be as critical as the opening of the gate.

The cost of the proposed Mt. Vernon Street Sewer, including connections from the housing development and a junction manhole at the connection from the University is estimated to be $3,800,000 at ENR Construction Cost Index of 2880, as projected to the price level estimated to prevail in mid-Spring of 1978. This is the level upon which bids might be based if received in mid-Fall of 1977. The estimated cost includes an allowance for cost of special security precautions in this area.

Lengths of Construction Periods

We estimate the approximate lengths of time required to construct the several items as follows. This would be the length of time required from execution of the construction contract to the completion of the construction work itself.

1. Mt. Vernon Street Sewer: 12 months
2. Main Interceptor Replacement: including connections and special structures: 33 months
3. East Side Interceptor Replacement - South Branch including connections and special structures: 18 months
4. East Side Interceptor Replacement - North Branch including connections and special structures: 33 months

The above time estimates do not include the time required for engineering design, field surveys and subsurface exploration or City and State and Federal reviews, and of course are dependent on field conditions and seasonal considerations. If the design of both the proposed Mt. Vernon Street Sewer and the Main Interceptor Replacement were started at the same time, construction of the Mt. Vernon Street Sewer could begin first. The

overall time required for the design, approvals and construction of the Interceptor Replacement would be about 5 years if construction would begin about 2 years after the receiving of approval from EPA and DWPC.

A bar chart showing an approximate schedule for design and construction of the four construction items is presented in Figure II-5.

Estimated Project Cost

The estimated project costs of the improvement items to be constructed by the City of Boston Public Works Department are indicated on Table II-1. In this it is indicated that about $5,800,000 would be the share of cost to be made available by the City, including the City share of eligible legal and administrative costs.

Basis of Estimate of Costs

The estimate of costs is for the total recommended Public Works Department program, but does not include any portion of the BRA program.

The estimate is based on the several cost levels indicated by the Engineering News Record Construction Cost Index numbers shown opposite each entry in Table II-1. The times in the future for which these are anticipated are stated in the description of the individual projects hereinbefore.

Construction costs have been increasing at a rate of between 8 and 10% per year for the last several years. The ENR index reflects the trend of construction costs available and has been widely used to update previous cost estimates to current day figures. If at sometime in the future, up-to-date construction cost estimates are desired, the costs in this report should be multiplied by the ratios of the ENR Construction Cost Index for Boston at that future time to the ENR indices used herein, provided other factors do not change.

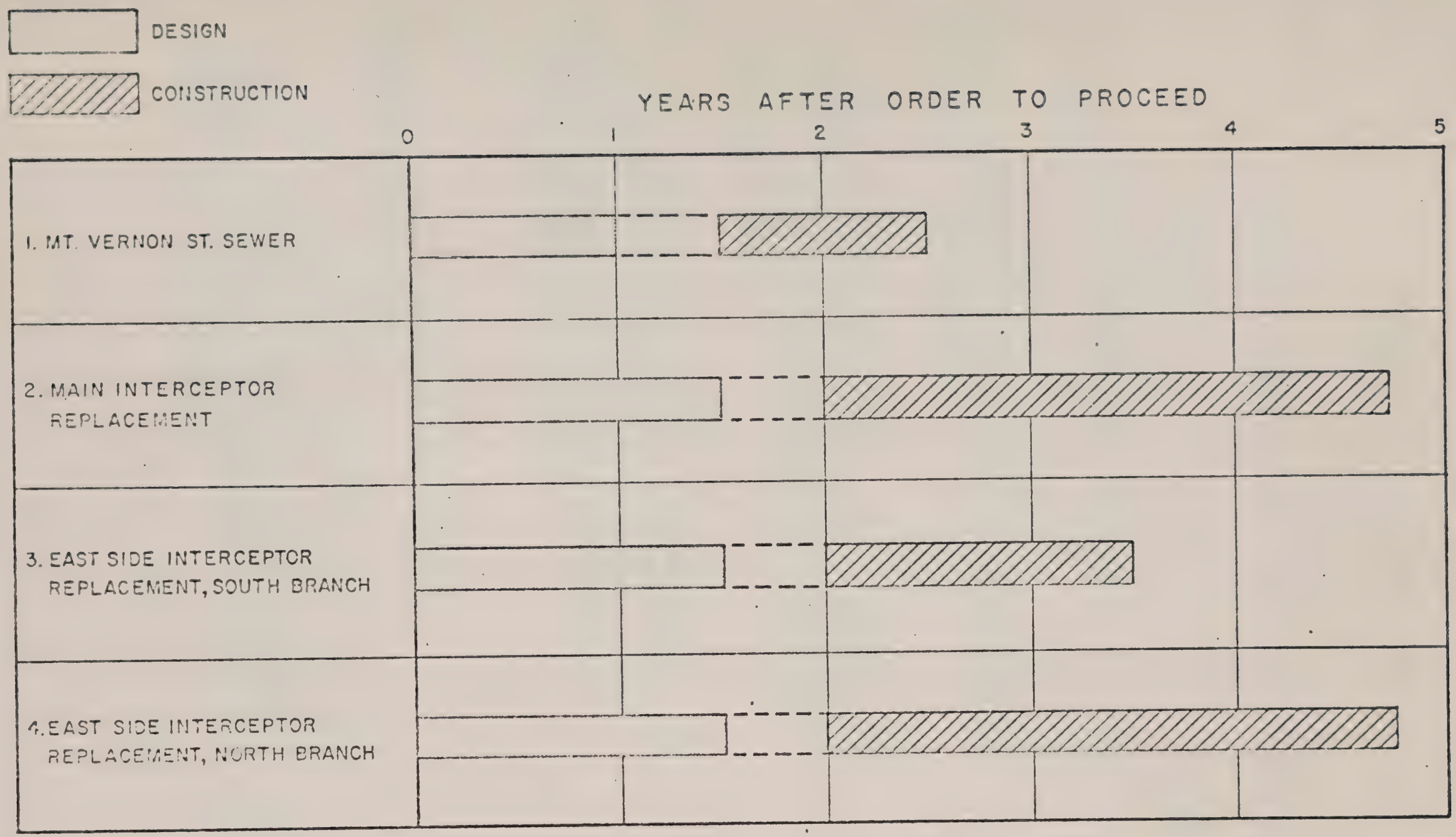


FIG. II-5 PROPOSED PROJECT SCHEDULE

CAMP DRESSER & McKEE Inc.

TABLE II-1

Estimated Cost of Recommended Construction Program

Improvements to the Boston Main Drainage System*

Description	Estimated** Construction Cost
Mt. Vernon Street Sewer, Columbia Point to MDC Diversion Chamber at Kosciuszko Circle (ENR 2880)	$3,800,000
Main Interceptor Replacement, from Junction of East Side Interceptor Replacement, North and South Branches to MDC Columbus Park Headworks (ENR 3340)	13,370,000
East Side Interceptor Replacement - South Branch, from Massachusetts Avenue to Main Interceptor Replacement (including crossing at S.E. Expressway and connections at East Concord Street, East Brookline Street, and Union Park Street) (ENR 3175)	8,240,000
East Side Interceptor Replacement - North Branch, from High Street to Main Interceptor Replacement (including connections at High Street, Oliver Street, Summer Street, Dorchester Avenue, Troy Street (Traveler Street), and East Berkeley Street) (ENR 3340)	32,590,000
TOTAL	$58,000,000
Local Share, City of Boston (after anticipated Federal and State aid)	5,800,000

* All items deemed eligible at this time for Federal and State grants

** Includes Contractor's contingencies and overhead and profit, and allowance for engineering and general contingencies. Does not include filling those sections of the existing East Side and Main Interceptors to be abandoned.

Cost estimates in the report include an allowance for engineering, an allowance for construction contingencies, and an allowance for eligible overhead costs incurred by the City including prorated costs for legal, administrative and engineering services and other similar items.

The City share of the project costs is based on the receipt of a Federal grant of about 75% of the project cost, and State grant through money available to the Division of Water Pollution Control of about 15% of the project costs leaving a balance of about 10% to be borne by the City. Cost associated with filling portions of the existing Main Interceptor, and existing East Side Interceptor later, would be in addition to those costs discussed above. It is our opinion that these costs would not be eligible for Federal or State participation, and these costs have not been included in project costs in Table II-1. Costs of acquisition of lands and easements, and associated surveying and legal costs are not included, and would not be eligible for grant aid.

Construction costs are based on contractor's bid prices for similar work in the Boston area for competitive bidding from prepared plans and specifications, for conduits of precast reinforced concrete pipe in the large sizes and vitrified clay pipe for connections. The estimates include allowances for sheeting where required, and for piles and concrete cradles where such support is needed.

Allowances for rock and removal and replacement of subsurface structures are included where these are anticipated. (Boring logs were included in Appendix G of Vol. 2 of the 1967 Report.)

The cost of handling water in trenches has been included for construction in areas where wet conditions are anticipated, and cost allowances made for subaqueous construction. Cost of jacking is included for crossing beneath embankments and railroad tracks when this method would be appropriate.

Provision is included for cost of traffic control, and in special areas, for security precautions.

Almost all the land occupied by the proposed interceptor replacements and the Mt. Vernon Street Sewer are either public ways within the City of Boston, semi-public lands under BRA or the Public Facilities Administration within the City of Boston, or harbor waters within the limits of the outer end of Fort Point Channel and limited access harbor waters in the upper end of Fort Point Channel and Roxbury Canal area. In addition, very short lengths of the alignment may fall on private property through which easements must be acquired. Costs for such easements should be small.

Factors for Recommending Construction

The principal factor upon which the need for construction of the recommended system of interceptor replacements is that almost all of the existing Main Interceptor and long sections of the East Side Interceptor, in particular west of Dover Street, are in poor structural condition. This is evidenced by failure of sections of the Main Interceptor in Massachusetts Avenue north of Clapp Street and in Mt. Vernon Street near the Dorchester Interceptor connection, and by the results of photographic inspection (1967 Report pp. 19-21).

The Main Interceptor would have adequate capacity for estimated year 2020 peak rate dry weather flows if all flows from the West Side Interceptor and Stony Brook Interceptor were completely diverted to the MDC Ward Street Headworks as planned (1967 Report, p. 20). This has not been done, because of the incomplete state of the diversion works at Camden Street serving the West Side Interceptor and at Tremont Street serving the Stony Brook Interceptor. In addition, a recently constructed sanitary sewer in Tremont Street east of Camden Street connects to the Main Interceptor south of the Camden Street diversion structure, although an earlier report by a BRA consultant recommended connection at the diversion chamber.

Because of these connections and because of continuing need for the existing interceptor for emergency relief of the Ward Street Headworks the Main Interceptor cannot as yet be removed from service. The proposed East Side Interceptor Replacement will serve most of the South End area, but cannot be laid at low enough elevation at Massachusetts Avenue to receive dry weather flows there from the Tremont Street sewer via the existing Main Interceptor without recourse to pumping. Some pumping might be required from South End sewers if they are built too low to enter the regulator

chambers of the Interceptor Replacement by gravity.

The proposed East Side Interceptor Replacement, South Branch, however, would be connected to the existing Main Interceptor in such a way that only emergency overflows from the Ward Street Headworks could be accepted when the Main Interceptor would flow at more than about half depth, and thus the replacement would act as a back-up sewer for the downstream section of the Main Interceptor, if that section were to suffer more structural damage.

The need for the North Branch of the East Side Interceptor Replacement is indicated by the inadequate capacity of the existing interceptor conduit for estimated future peak dry weather flows, its 90-year age and questionable structural condition. The need is made further evident by the relative elevations of the junction chamber at High Street. The elevation of the upstream conduit recently built under the Downtown Waterfront Urban Renewal Area Site Preparation contracts, is about two feet lower than the connecting downstream conduit, a section of the old existing East Side Interceptor. This situation, although accepted as a temporary measure pending construction of the proposed downstream East Side Interceptor Replacement, should not be continued. Construction, also, of the Replacement should be completed before opportunity is lost for the conduit location in the now open waterway of Fort Point Channel.

Alternative Routes

Alternative general arrangements of systems of the several interceptors were considered, and alternatives to the recommended routes were studied for all the proposed interceptor replacements.

Brief consideration was given to the bringing together of the interceptor

replacement conduits to a headworks and a possible future fourth shaft of the Boston Main Drainage tunnel. The headworks and shaft were studied for location on under-utilized land between Southampton Street and the Fitzgerald Expressway. Anticipated difficulty and hazard of construction with the tunnel in operation, however, and the complexity of practical control and operation of the resulting tunnel and shaft arrangement led to discontinuance of the alternative plan.

The alternative routes studied for the Main Interceptor Replacement included both a route along the existing interceptor to the MDC Columbus Park Connection at Kosciuszko Circle, and a route in Southampton Street and Preble Street from Albany Street to the Columbus Park Headworks.

The alignment of the proposed Main Interceptor Replacement from a point east of the Central Artery and east of Union Park Street, if extended, to the Columbus Park Headworks is recommended based on the need to transport wastewater by as short a route as feasible from the center of wastewater generation to the point of discharge to the MDC Boston Main Drainage tunnel.

Reconstruction of all or major sections of the existing Main Interceptor in Massachusetts Avenue and elsewhere while in service is not a practical solution and the construction of a replacement conduit along that alignment would involve massive dislocation of traffic and construction of long sections of pipeline on poor foundations. The route would require greater lengths of conduit of larger sizes to be built than for the recommended route. This alignment also would reduce the available capacity of the Columbus Park Connection for wastewater flows from the Dorchester Interceptor.

For the East Side Interceptor Replacement, North and South Branches, an alternative route was considered along the existing interceptor alignment.

This alignment is not recommended. The existing interceptor alignment is generally located in major city streets, beneath a railroad yard, etc., from the newly constructed junction chamber in the vicinity of High Street at Atlantic Avenue to Albany Street at Massachusetts Avenue. Extensive relocation and disruption of existing utilities would be required. Problems associated with traffic control and public safety would be at great magnitude along this route.

The alignment of the South Branch of the East Side Interceptor Replacement was considered in the 1967 Report to extend along and northwest of the Roxbury Canal Conduit from near the Expressway to Massachusetts Avenue. Because of construction in the Flower Mart Area, the recommended alignment was altered in the 1972 Update Report to extend along the southeast side of the Roxbury Canal Conduit. In this way additional clearance was gained for construction along this section of the interceptor replacement but more crossings beneath the conduit would be involved.

The proposed alignment of the North Branch Replacement was altered in the 1972 Update Report to be constructed at the edge of the little-used waterway of Fort Point Channel as an accessible route and for the added advantage of ease of construction. This route would also require minimal disruption to existing utilities and subaqueous construction methods would ease water handling below that for an onshore route.

Effect of the Proposed Improvements on Water Quality in Boston Harbor

The water quality of Boston Harbor is discussed in Chapter IV of the CDM 1967 Report. Required standards of water quality set by the Massachusetts Division of Water Pollution Control, 1967, are quoted in Appendix N.

The works proposed in this report for construction as eligible for grants-in-aid from federal and state sources are only a small part of those recommended on the 1967 comprehensive plan.

The whole program recommended in the 1967 Report, including the improvements at South Boston and Dorchester, and the Deep Tunnel system for retention, treatment and disposal of overflows of mixed wastewater and stormwater and the incursions of the tide water, would substantially eliminate the pollution of Boston Harbor from such overflows.

The present initial program of interceptor replacement and sewer construction is a proper first step in such an overall program.

The presently proposed improvements, by providing adequate capacity for dry weather flows for many years in the future, and structurally sound conduits, will substantially reduce the possibility of overflow to Fort Point Channel and the Inner Harbor during dry weather periods, and the danger of internal sewerage distress in the South End and portions of Roxbury and North Dorchester sections from collapse of interceptors. The provision of new regulators and rehabilitation of others, and of new tide gates under this program, together with the rehabilitation of tide gates by the MDC for the City of Boston in the last few years, will reduce and almost eliminate the earlier reported discharges in dry weather of mixed flows of sanitary and industrial wastewater with salt water to the Harbor, and to the MDC Deer Island Wastewater Treatment Plant. This would be true only with constant inspection and maintenance of the tide gates, to prevent the entrance of tide water which would surcharge the interceptors and return to the Harbor carrying with it an admixture of wastewater.

The redirecting of wastewater from the existing Main Interceptor at Albany Street through the proposed East Side Interceptor Replacement,

South Branch and the Main Interceptor Replacement will reduce the loading on the Main Interceptor southeast of Albany Street. This would provide greater capacity there and in the existing Columbus Park Connection for flows from the southern portion of the South Boston Interceptor, North Branch and the Dorchester Interceptor service areas, thus reducing the incidence and volume of combined wastewater overflow from regulators on these interceptors into Dorchester Brook Conduit (to Fort Point Channel) and to Old Harbor and other parts of Dorchester Bay.

The proposed Mt. Vernon Street Sewer is to collect separate sanitary wastewater and would eliminate the discharges of such wastes from local sources to the existing Main Interceptor east of the MDC Diversion Chamber. This would reduce the formation of large volumes of septic wastewater in the Main Interceptor downstream of the Diversion Chamber such as might be swept to the Harbor when the Interceptor and Calf Pasture Pumping Station are called upon to relieve surcharges in the Boston Main Drainage System when MDC facilities are overloaded. The sanitary sewer will thus substantially reduce the discharge of untreated septic wastewater to the Harbor, with subsequent improvement in Harbor water quality.

Effect on City of Boston Assessment by MDC for Sewer Services

The sewer connections from the Boston Sewerage System to the Metropolitan Sewerage System are explained and discussed in the CDM 1967 Report in the letter of transmittal, Chapter X, and Appendix E.

Connections 138 and 139 will be affected by the proposed works. Connection 138 from the South Branch of the South Boston Interceptor to the MDC Columbus Park connection upstream of the headworks, would be reconnected to the proposed 96-in diameter Main Interceptor Replacement just upstream

of the junction of the interceptor replacement with the MDC Columbus Park Connection. This would eliminate cost to the City for a connection of rated demand-capacity of 13.37 mgd (pg. E-13, 1967 Report).

A new, and as yet unnumbered, connection would be introduced by the construction of the proposed junction of the 96-in diameter interceptor replacement with the Columbus Park Connection. This would have a rated demand-capacity of 100.54 mgd based on the nominal pipe diameter.

Connection No. 139, the present junction of the existing 126-in diameter Main Interceptor at the existing MDC Diversion Chamber at the upstream end of the MDC Columbus Park Connection (conduit) could be reduced by reconstruction to about a 72-in diameter connection which would have capacity to meet the City's needs for service after the recommended Main Interceptor Replacement is in operation. There would be continuing need for service at that location for the existing Dorchester Interceptor, for a small area in Dorchester, near Boston Street served now and until proposed construction (CDM 1972 Report) is completed, by the section of the existing Main Interceptor in Clapp Street and easterly, and for the connection from the proposed 42-in diameter Mt. Vernon Street Sewer. The Mt. Vernon Street Sewer should be connected to the existing Main Interceptor west (i.e., upstream) of the existing Diversion Chamber to avoid making an additional junction with the MDC conduit.

Reconstruction in this manner, of the Main Interceptor junction with the MDC sewer could reduce the rated demand-capacity of Connection No. 139 from 111.89 mgd to 56.54 mgd.

As a result of changes at the locations of Connections Nos. 138 and 139 the net effect on the total demand-capacity of the City would be an

increase of about 31.82 mgd.

It might be possible to avoid the actual reconstruction of the junction at Connection No. 139 if the City could obtain agreement with the MDC that the assessment would be on the basis of a nominal 72-in diameter connection. The MDC apparently desires to keep the section of the Boston Main Interceptor from Tremont Street to the Calf Pasture Pumping Station in condition for operation for an indeterminate period in the future to continue to function as part of its MDC relief overflow system for the Ward St. Headworks, including the Pumping Station and discharge main and outlet works. For this reason it is probable that the MDC would not want the hydraulic capacity of the connection at the Diversion Chamber reduced below that of the existing 126-in diameter conduit.

It should be pointed out in discussing this situation with the MDC that any capacity greater than that of the 72-in diameter connection is for the benefit of the MDC, not the City of Boston, and Boston should not be penalized by additional assessment for the larger connection.

The cost of changes at Connection No. 139 to reduce the size of the connection probably would not be eligible for grant aid, but the net saving to the City over a few years would far offset the cost, even if borne entirely by the City.

Additional Work Recommended for Boston Main Drainage District

In the 1972 Report Update, items were recommended for construction, summarized in Table 1 therein, in addition to the Main Interceptor Replacement, East Side Interceptor Replacement, North and South Branches, and Mt. Vernon Street Sewer. These are not shown on Figure A, but were indicated on Figure 1 of the 1972 Report Update.

The sewers recommended in 1972 to take the place of portions of the existing Main Interceptor must be re-assessed because of the situation introduced by the need for some period in the future for continuing operation of the existing Main Interceptor. If the Main Interceptor is kept in service from Clapp Street southeasterly to the Diversion Chamber at the MDC Columbus Park Connection, restudy might show that the connection from the South Boston and Dorchester Interceptors (Item 7 therein), and sewers in the vicinity of Boston Street, Clapp Street, and Enterprise Street would not be constructed until the existing Main Interceptor from Clapp Street to the Diversion Chamber is to be taken from service.

Suggested Schedule

Coordinated steps in the progress of the project must be taken in time to meet the Implementation Schedule set forth in the NPDES permit issued by EPA and DWPC for the Step II grant application. Among these the following are suggested:

1. Submit grant application and meet with EPA and DWPC as necessary to explain and receive approval.

2. Engage an engineering consultant for the design of the project and for construction services. Have the engineering consultant prepare and submit the Step III grant application. Work with consultant during design phase to provide all necessary information from city files and assist consultant in obtaining information from files of other consultants and state and federal and other agencies concerned.

3. Authorize funds as necessary for the anticipated City share of costs including costs of engineering, legal, fiscal and other expenses, and arrange financing to meet these costs.

4. Submit Clearing House form for Step III, the construction program, and obtain necessary clearances from all state, federal and other agencies concerned.

5. Obtain legislative act to authorize location of East Side Interceptor Replacement, North Branch in Fort Point Channel outside the bulkhead and pierhead line as step in obtaining permit from Department of Public Works and obtain such permit.

6. Revise City sewer ordinance in accordance with NPDES requirements an obtain EPA and DWPC approval, obtain passage of the ordinance by the City Council.

7. Revise the City sewer use ordinance as necessary to meet requirements of EPA and DWPC, and obtain the approval of these agencies as necessary. Obtain passage of the ordinance by the City Council.

8. Prepare and obtain approval of an industrial cost recovery ordinance as necessary as required by EPA and DWPC. Obtain approval of these agencies and obtain passage of the ordinance by the City Council.

9. Obtain easements, and arrange for purchase of land in fee as may be necessary.

10. Obtain necessary approvals of design and construction plans and specifications and finalize federal and state grants under Step III. Upon receipt of approval from EPA and DWPC, advertise for bids for construction. Receive bids, obtain bid evaluation recommendation from consultant and submit request for DWPC and EPA approval to award contract for portions of contract eligible for grant aid.

11. Upon receipt of such approval award.construction contract or contracts.

12. Operate and maintain the completed facilities including provision for inspection and routine and emergency maintenance of tide gates and regulating structures.

Use of Earlier Reports

Much of the information required to be furnished as part of the facilities plan has been developed separately and presented in an earlier report by the Consultant, "Report to City of Boston on Improvements to the Boston Main Drainage System", September 1967, (in two volumes), to which reference is made. Copies of these reports have been filed with the EPA Region I and with the Massachusetts DWPC. Planning previously accomplished under local, state or federal programs is utilized herein to avoid duplication (EPA Regulations, Section 35.917 [g]).

Chapter III

Infiltration/Inflow in Areas Tributary to Proposed Interceptors

General

"Extraneous flow" and "infiltration" were the terms used in our 1967 report to describe that portion of the total wastewater flow resulting from the entrance of groundwater, storm water and tide water into a sanitary sewer, combined sewer, or dry weather intercepting sewer. Today it is more often termed "infiltration/inflow", with a definite designation of each. The update of sewage treatment standards by federal and state agencies, under PL 92-500, "Federal Water Pollution Control Act Amendments of 1972" made "zero discharge" the national goal. This has resulted in decisions as to whether or not it is cost effective to handle all wastewater flow including infiltration and inflow which may overload the sewers and increase the cost of treatment facilities. The basic problem lies with the condition of existing collection systems and extraneous flow which is created by inflow from storm drains, tide gate malfunction or service connections and by infiltration from physical defects in the wastewater collection system. The 1972 Acts deal with infiltration/inflow, how to evaluate it and when to rehabilitate the collection system.

The existence of excessive or non-excessive infiltration/inflow conditions should be determined prior to construction of wastewater handling facilities. The following text includes a re-evaluation of the information presented in CDM's 1967 report and amplification by investigation in 1975. Emphasis is placed on major sewer areas having a direct effect

on the proposed interceptors replacements. Three of those areas are BRA Urban Renewal Areas; the Downtown Waterfront, the South Cove, and the South End.

Boston's sewers are influenced by the dynamics of a large city, tidal influence, and combined sewers (handling mixed storm and sanitary wastewater). Gaging points utilized in the 1967 study were reviewed. Particular attention was directed toward those that have tributary areas discharging to the proposed interceptor replacements. Physical inspection was again made at selected sites.

Rates of wastewater flow including extraneous flow (infiltration/inflow) were established in the 1967 report and utilized in the design criteria for the proposed interceptor replacements. Many of the design problems revolve around excess flows from the two separate sources of inflow, surface runoff from storms entering the combined sewers by deliberate design, and tidewater entering the interceptors through malfunctioning tidegates.

Unless the entire collection system is separated into sanitary and stormwater systems, correction of only infiltration problems will not be totally effective in reducing pollution resulting from combined overflows. That is not to say that system rehabilitation will not be economically advantageous.

The 1967 report, Table 9, "Infiltration Rates in Existing Sewers" presents infiltration rates derived from gaging typical areas of concern. The results show that infiltration does exist. However, the scope of that report was prepared before the adoption of PL 92-500 in 1972 and, without its guidance, did not carry the investigation beyond the scope now outlined for Phase 1 (I/I analysis) in the EPA publication "Guidance for Sewer System Evaluation", March 1974.

Sewer Division Complaint Reports

There are approximately 6200 reports of complaints received annually in recent years by the Sewer Division of the Boston Public Works Department from property owners or department field staff members. Of these, about 3500 complaints were found to require corrective action.

We have examined complaint reports received from January 1974 to September 1975 and classified them according to location and cause. Approximately 250 complaint reports received in this 21-month period were found to be related to sewer stoppages, flow at excessive water surface levels (surcharges) or sluggish flow indicating obstructions or insufficient capacity downstream. Defective catch basins, manholes, and deficiencies of drains or plumbing on private property were not included in this count.

Reported stoppages were clustered in areas in the North End centered on Commercial Street and in an area between Noves Place and Cooper Street. Stoppages were also reported in areas in the South End, especially at Dartmouth Street, and South Boston in the Dorchester Avenue vicinity. Surcharged sewers and sluggish flows were reported in the same principal areas. Individual and small groups of reported locations were scattered throughout the city.

The major cause of sewer stoppages or sluggish flows was due to the build-up of grease in sewers with low flow velocity. In 1974 the most serious grease problems occurred in sewers along Commercial Street near Commercial Wharf due to the high grease content of the wastewater from a meat processer located in the area. This problem has been controlled by the 1975 installation of grease traps by the company. No complaint reports relating to sewer stoppages were reported in the area in 1975. Other causes of sewer stoppages were due to the build-up of sticks, rags, or

gravel. In all cases the sewers were freed by sewer rodding.

Anything of the nature described above that hinders the flow of wastewater in a pipe causes problems during examination and evaluation of a collection system. For this reason, exhaustive steps far beyond visual inspection and gaging are often required. As a precaution, sewers gaged by CDM for the 1967 report were jet rodded prior to gage installation. Obstructions are not the only problems relating to field investigation, inflow from malfunctioning tidegates and the like also negatively influence data collection.

Reports of flooding or increased flow conditions due to improper tidegate operation were located in areas in the North End primarily on North Margin Street, Fulton Street and Portland Street. High water levels in the sewers or manholes at these locations due to exceptionally high tides is also influenced by the relatively low elevation of the basically flat land. Therefore, tidegate operation on overflows in the North End must be extremely efficient to prevent flooding of streets in this area.

Effect of Combined Sewers on the Infiltration/Inflow Problem in Boston

The existence of the combined system of sewers in the City of Boston adversely affects the overall infiltration/inflow problem in several ways. During storm events, combined sewers accept and convey both sanitary wastewater and stormwater runoff to regulator structures where the maximum allowable (capacity-wise) flow is discharged to the interceptor and thence to the treatment works. The remainder is diverted either to a stormwater overflow conduit and thence to a receiving water or directly to a receiving water. The admixed storm water is thus included as "inflow," i.e., extraneous flow which otherwise might not require treatment to the

degree given to the sanitary and industrial wastewater fraction.

In addition to stormwater runoff from street and surface drains, combined sewers also accept stormwater inflow from buildings through roof leaders, foundation drains, basement drains and yard drains. If a future sewer separation program is implemented in existing combined sewer areas, stormwater connections from the properties of private individuals and organizations would have to be disconnected from the existing combined sewer and reconnected to the new storm sewer. The existing combined sewer would be employed as a separate sanitary sewer upon completion of the separate storm sewer system. Location and detection of all sources of inflow from private establishments, separating these sources from the sanitary discharges and reconnecting the inflow sources to the storm system would constitute a physical and legal task of staggering proportions.

A problem of enforcement would result if building plumbing separation were to be required at the owner's expense. It may require extensive renovations to the buildings themselves which could prove extremely costly.

Also affecting the overall I/I problem is the construction material used for the existing combined sewers. Many of these sewers in Boston have been constructed of brick with cement-mortar joints. Considering that the majority of the sewers in the city are over 100 years old, defective joints, cracks, and defective masonry could be present in many sewers. This could allow groundwater to infiltrate the sewer through these leaks depending on the relative elevations of the groundwater table and the sewers.

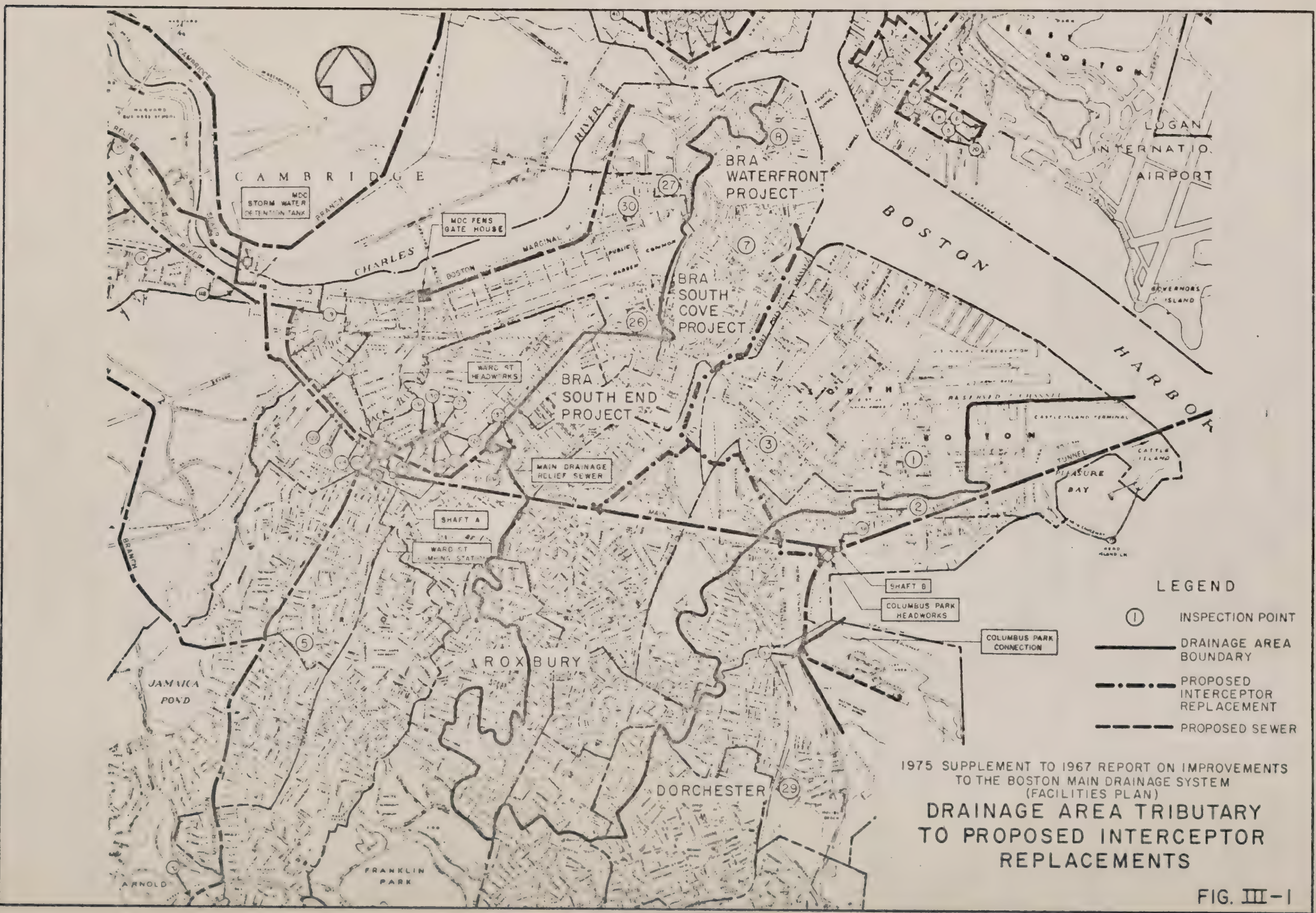
Investigation

Infiltration as discussed in the 1967 report is tabulated for various inspection points in Table 9 of that report. Many of the estimated flow rates are high because of the predominance of combined sewers throughout the Boston area. Separated sewers characteristically have lower I/I rates.

Utilizing the results of preliminary gaging in conjunction with a variety of written sources, visual inspection tours, recent complaint records and interviews, certain areas have been determined as having probable excessive infiltration not to mention the excessive inflow from combined systems. Quantities of storm water and tide water entering the City's collection system are impossible to measure with any degree of accuracy without an all-out gaging program.

The gaging points summarized in the 1967 report were individually reviewed. Points 1, 2, and 3 shown on the map, Figure III-1 in the South Boston area revealed a definite possibility of excessive infiltration and because the tributary collection system is combined, inflow is also an important consideration. Boston's Downtown area relating to Gaging Point No. 7 had an estimated infiltration rate of 58,100 gpad which is more than double the maximum design flow infiltration rate. Gaging Pt. 8 on Hanover St., North End,also showed an estimated infiltration rate (49,900 gpad) approximately double the maximum design rate for combined sewers. Points 17, 18, 22, and 23 also give indication that excessive infiltration may exist in the Dorchester tributary area. The Gaging Points 4, 5, and 6 in the Roxbury area like other areas mentioned give substantial reason to believe excessive infiltration may exist there also.

Although many examination points were outside the tributary area they were deemed characteristic of sewers within the tributary area. In addition to the points in the 1967 investigation, the following additional points were utilized for this investigation.



1975 SUPPLEMENT TO 1967 REPORT ON IMPROVEMENTS
TO THE BOSTON MAIN DRAINAGE SYSTEM
(FACILITIES PLAN)

DRAINAGE AREA TRIBUTARY TO PROPOSED INTERCEPTOR REPLACEMENTS

FIG. III-1

Additional Inspection Points

26 LaFayette and Church Streets

27 Cambridge Street at S. Russel Street

28 Stimson Street in W. Roxbury

29 Denny Street sewer W. of Savin Hill Avenue

30 Mt. Vernon Street at W. Cedar Street

As a result of information gathered, design infiltration rates for areas served by existing sewers presented in 1967 (page 76) remain adequately summarized as follows:

	Combined	Separate Sanitary
Minimum, gpad	10,000	1500
Average, gpad	17,000	2500
Maximum, gpad	25,000	4000

The maximum infiltration rate shown for existing combined sewers has been used for tributary areas up to approximately 20 acres. For tributary areas between 20 and 250 acres, we have used maximum infiltration rates decreasing from 25,000 gpad to 4,000 gpad and, for areas greater than 250 acres we have used 4,000 gpad.

The interceptor replacements have been designed for a proposed total allowable infiltration of about 14 mgd relating to a tributary area of 3500 acres. This converts to about 4,000 gpad.

The Mt. Vernon Street Sewer is adequately designed for the estimated dry weather flows collected from its tributary area. Included in the estimated flow is an allowance for infiltration. The possible reduction in the allowance is not enough to affect the nominal pipe diameters selected. The collection system here is of recent construction, making it less subject to infiltration than that of the older construction.

In an attempt to further the (Phase I) analysis presented in the 1967 report. CDM concentrated on areas tributary to the proposed interceptors and examined pertinent manhole structures during dry periods of recent summer months. Although the summer season is not the most advantageous period for I/I investigation the time available for the report preparation dictated the schedule. The recent inspection was conducted during low flow and varying tidal conditions.

In many situations surcharging prohibited flow measurement. Deposits were frequently observed in the lines making flow calculations difficult. However, depths of flow and corresponding volumes obtained from recent inspections were compared with those of earlier investigations. Considering the above mentioned variables, the current results were close to those of the earlier gaging records.

It has been shown that certain subareas have infiltration rates many times higher than 4,000 gpad. It is those areas that should be further identified and evaluated. This would entail a systematic gaging program beyond the scope of the analysis in this report.

In summary, portions of the following areas are suggested for inclusion in a Phase II evaluation, not as they relate to the design of proposed interceptors but as they relate to overall conveyance, operational and maintenance costs.

Portions of	Suspected Infiltration Rates as high as
(1) South Boston	47,400 gpad for 18 acres
(2) Downtown Boston	58,100 gpad for 15 acres
(3) Boston (North End)	49,900 gpad for 6 acres
(4) Roxbury (East)	17,290 gpad for 9 acres

The flows listed basically represent infiltration in combined sewers for relatively small subareas. CDM has recently verified these suspected problem areas from physical inspection tours, complaint records, interviews with City personnel and tidegate maintenance records.

Cost-Effectiveness

The above discussion indicates that infiltration would not affect the size or routing of the proposed interceptors or the proposed Mt. Vernon Street Sewer. This reduces the need for a cost-effective analysis as it would relate only to the proposed construction. However, it is our opinion that I/I from portions of the existing system is high enough to warrant consideration for a cost-effectiveness analysis as it relates to the cost of operation and maintenance of Deer Island and related headworks and the respective costs to Boston.

Although it has been stated that further investigation of the system is warranted, the possible cost-effectiveness of a rehabilitation program must be preliminarily studied pending such an investigation. This analysis is a comparison of the estimated cost of conveying and treating the estimated volume of I/I to the estimated rehabilitation costs of the existing collection system to remove a portion of the I/I and treat the remainder. Part of the intent of the following discussion is to determine a realistic dollar value for identification and rehabilitation of a unit of infiltration.

It has been reported by the MDC that in the fiscal year ending June 1975 an average of 292 mgd was conveyed and treated by tributary headworks and the Deer Island Plantfor an estimated operation and maintenance cost of $3,800,000. Therefore, the simplified handling cost per million gallons per day per year would be about ($3,800,000/yr/292 mgd) = $13,000.

Assuming a 20 year rehabilitation life, a 6.125% discount rate and steady annual operational costs, the present worth of the $13,000/mgd/yr unit handling cost would be about $147,600. Therefore, in order for rehabilitation in any portion of the Boston system to be cost-effective, the cost to eliminate each million gallon per day of infiltration should not exceed an amount approximating $150,000, including investigation and

evaluation costs.

As an example of the magnitude of I/I that may be economically feasible to eliminate, the tributary area to the proposed 84-in North Branch of the proposed East Side Interceptor Replacement was investigated. This 530 acre area extends from Hanover St. to Kneeland St. encompassing much of the Boston downtown district. Assume 1/2 of the area indicates an infiltration rate of about 13,500 gpad (gallons per acre per day) possibly exists. Theoretically, using this value (13,500 x 265), 3,577,500 gpd (gallons per day) could be eliminated under total rehabilitation. Of course, total rehabilitation and bottle tightness (i.e., to provide a bottle-tight conduit) is not feasible in the Boston system.

Assuming that 70% rehabilitation of the example area were possible, the remaining infiltration rate would be about 4,000 gpad. This would constitute a removal of about 9,500 gpad or 2,517,500 gpd for the subject tributary area. The savings accrued by elimination of the need to convey and treat this amount would be (2.52 mgd [million gallons per day] x $13,000 mgd/yr) $32,760/yr. Projecting this over a 20-year period at 6.125%, it would be economical today to spend about $372,000 for investigation and rehabilitation of that area. This example is indicative of the conclusions that would result from a more extensive Phase II evaluation survey.

Even with a 2.52 mgd decrease in flow, a decrease in the diameter from 84-in to 72-in is not within design tolerances. However, if it were possible to eliminate 21 mgd or more, the possibility of a size reduction should be considered.

Similar reasoning can be advanced for the overall Main Interceptor Replacement tributary area (3500 acres). Based on the assumption that Phase II evaluation may indicate 4000 gpad of infiltration exists and can possibly be reduced to 2000 gpad or less, the following analysis may be pursued. The interceptor replacement conduit for the total area is designed for an allowable infiltration of (4000 x 3500) 14 mgd. A reduction of infiltration to 2000 gpad represents an estimated (2000 x 3500) 7 mgd that would not have to by handled by the City and the MDC. This would not affect the pipe diameter design so cost-effectiveness should relate to conveyance, treatment and maintenance costs. Using the unit cost established above of $13,000/mgd/yr applied to a 7 mgd infiltration reduction, a first year savings would be $91,000 for the overall tributary system. On a present worth basis (20 yrs, 6.125%) this would be equivalent to $1,033,214 that could be applied today for a Phase II evaluation and rehabilitation. It should be noted with the large variation of infiltration from various subareas, rehabilitation of the worst areas would reduce infiltration dramatically.

The variation in flow required for a pipe diameter change on large diameter interceptors represents millions of gallons per day and certainly represents a greater expenditure for rehabilitation than solely to decrease or increase a proposed interceptor by one nominal pipe diameter. In addition, pipe size reduction resulting from elimination of infiltration reduces conservativeness or the factor of safety in design. This was not recommended during preliminary design nor included in this analysis. Another factor to consider is the life expectancy of rehabilitation and its effectiveness.

On the above basis the cost-effectiveness of possible evaluation and rehabilitation should be based on projected operational cost at Deer Island and respective headworks which is beyond the scope of this report.

The causes and location of excessive flows in the overall system and closer estimates of cost of elimination must be determined prior to presenting a more definitive cost-effective analysis relating to MDC operational and maintenance costs. Any flow, whether it be 1 mgd or 26.5 mgd or 50 mgd that can be defined and eliminated for a unit cost per million gallons per day of about $150,000 is probably cost-effective with respect to the MDC system.

In large metropolitan areas such as Boston, the wastewater component from residences, commercial establishments, institutions and industries is frequently a major portion of the minimum measured flow. This makes it more difficult to identify the infiltration component in an I/I analysis for a city the size of Boston as opposed to smaller communities.

Therefore, a Phase II evaluation is indicated in order to better pinpoint problem areas and present more extensive support for rehabilitation.

Phase II Evaluation Program

The importance of identification of infiltration and inflow accurately cannot be overstressed because values attained are the basis for a variety of economic and feasibility studies. The choice between accepting the extraneous flows and treating them or, eliminating them is often difficult. Each choice has an associated cost and requires careful analysis prior to any policy decision.

We have previously in this chapter delineated those areas of the system tributary to the proposed interceptor replacements where high groundwater elevations, high rate of flow, and defective pipe conditions estimated from gaging, recent visual inspection and a variety of records indicate the possibility of greater than optimum infiltration rates. A follow-up evaluation of the system will be necessary to provide the city with more data

to be used for economic and feasibility studies not only for the proposed construction of interceptor replacements but for future projects.

Design and construction of the proposed interceptor replacements can continue because it has been demonstrated above, that rehabilitation of tributary sewers would not eliminate or decrease infiltration enough to mandate a pipe diameter change. However, relating rehabilitation to pumping, treatment, and maintenance costs of the MDC may prove that rehabilitation would be cost-effective.

Phase I of sewer system analysis as outlined in the EPA guidelines has been conducted to determine the possibility of high infiltration and those areas involved. Phase II is organized to pinpoint problem areas, causes, establish the economics of rehabilitation, etc.

The first step of a Phase II Sewer System evaluation for Boston is indicated. This part of the evaluation would include more extensive continuous gaging to pinpoint problem areas and better estimate rates of infiltration/inflow. After problem areas are determined from gaging, the second step of a Phase II evaluation involves opening and inspecting all manholes in the areas found to have high infiltration. Based on this inspection, assumptions may be made for the total length of sewers involved that would have to be cleaned, and then inspected by television. Additional procedures such as dye or smoke testing may also be considered and performed in selected areas. Finally a written report, including a proposed schedule and budget for system rehabilitation, would be compiled.

Due to the uncertainty of the amount of infiltration/inflow in the overall tributary sewers and the unknowns of specific problem areas which may require further evaluation and ultimately rehabilitation, only an approximate estimate for cost of a comprehensive gaging program and report

has been included.

We estimate that approximately 50 gaging points would be required to accurately monitor varying flow conditions on sewers tributary to the proposed interceptor replacements. Considering the seasonal periods when gaging is desirable, field services and office analysis to pinpoint suspected areas of high infiltration and/or inflow, the engineering cost may be on the order of $400,000 or more for the basic scope of work in the first step of the Phase II sewer system evaluation survey as outlined in the aforementioned EPA "Guidance for Sewer System Evaluation."

CHAPTER IV

ENVIRONMENTAL ASSESSMENT

Portions of this environmental assessment chapter include material from other chapters in this report. This material is repeated to insure continuity with the report and to insure that all considerations involved in evaluating the environmental impact of the projects are included within the assessment itself.

The text of the assessment addresses topics I, II, III, V, and VI of the standard form on page IV-2.

Implementation Plans

The three wastewater collection facilities discussed in this report are mandated by special conditions attached to the NPDES Discharge Permit (appended to this report) for the city of Boston issued April 2, 1975. According to the Special Conditions, Part B, titled Implementation Schedule Item 4, preparation of final plans and specifications is to begin by January 1, 1976 for the Mt. Vernon Street Sewer and by June 30, 1976 for both the East Side and Main Interceptor Replacements. According to Item 5, plans and specifications for the Mt. Vernon Street Sewer must be submitted to the Regional Administrator (EPA) for review and to the Director (Massachusetts Division of Water Pollution Control) for approval by January 1, 1977.

Request is being made for deferring the starting date for the Mt. Vernon Street Sewer design until later in 1976 so that start of design will not be required before approval of the Step II construction grant application.

ENVIRONMENTAL ASSESSMENT

Project Identification

Name of Applicant: City of Boston Public Works Department

Address: 1 City Hall Square, Boston, MA 02201

Project Number: Federal MA 0101192; State M-121 (Application No. M-124)

Location of Project: Boston, Mass.

Brief Description of Project: Project involves replacement of the existing East Side Interceptor and Boston Main Interceptor, and construction of a sanitary sewer in Mt. Vernon Street as described in the report by Camp Dresser & McKee Inc. entitled: 1975 Supplement to 1967 Report on Improvements to the Boston Main Drainage System.

I. Any pending enforcement conference recommendations, air or water quality standards implementation plans, or other legal or enforcement actions and the respective status or progress of each:

II. Probable impact of the project on environment:

III. Any probable adverse environmental effects which cannot be avoided:

IV. Alternatives considered with evaluation of each. (See Chapter II)

V. Relationship between local short-term uses of environmental and maintenance and enhancement of long-term productivity:

VI. Any irreversible and irretrievable commitment of resources:

VII. Public objections to project, if any, and their resolution: See Appendix E.

VIII. Agencies consulted about the project: (See following pages)
State Representative's Name:
Local Representative's Name:

(Signature)
Authorized Representative of Applicant

State Representative's Name

Thomas C. McMahon, P.E., Director
Division of Water Pollution Control
Leverett Saltonstall Building
Boston, Massachusetts

Local Representative's Name

Joseph F. Casazza, P.E.
Commissioner of Public Works
City of Boston
City Hall
Boston, Massachusetts

City of Boston Agencies Contacted

- Parks and Recreation Dept.
- Public Facilities Dept.
- Public Works Dept.
- Law Dept.
- Boston Housing Authority
- Conservation Commission

- Boston Redevelopment Authority
  - Planning Division
  - Boston Landmarks Commission
  - Engineering Division
  - Real Estate Dept.
  - Mapping Division
  - Transportation Division

State Agencies Contacted

- Dept. of Environmental Quality Engineering
- Division of Waterways
- Bridge Division
- Urban Systems Section
- Project Development Division
- Division of Water Pollution Control
- Massachusetts Historical Commission
- Office of State Planning & Management (State Clearing House)
- Mass. Port Authority (Massport)
- Mass. DPW - Transportation Planning & Development

Massachusetts Bay Transportation Authority

- Civil and Design Division
- Power Division

Federal Agencies Contacted

- U.S. Army Corps of Engineers (Navigation Branch)
- U.S. Coast Guard
  - Civil Engineering Division
  - Operations Division
- Environmental Protection Agency, Region I
- Post Office Dept.

Others

- C.E. Maguire Inc.
- Charles T. Main, Inc.
- Schoenfeld Associates
- Parsons, Brinkerhoff, Quade and Douglas
- University of Massachusetts, Boston Campus
- Boston Gas
- Boston Edison

Metropolitan District Commission

- Records Division
- Sewerage Division
- Engineering Division
- Environmental Planning Office
- Construction Division
- South Metropolitan Sewage District Office

Metropolitan Area Planning Council
- Water Quality Staff

PROBABLE IMPACT ON ENVIRONMENT

WATER QUALITY

Waste Treatment Management Plans

The current recommended overall mixed sewage and stormwater overflow treatment management plan for the City of Boston is the Deep Rock Tunnel Plan described in the 1967 Camp Dresser & McKee, Report on Improvements to the Boston Main Drainage System. The plan calls for collection and storage of combined overflows in a system of deep rock tunnels leading to treatment and ocean discharge of mixed sewage and stormwater rejected at regulators of the Boston Main Drainage System.

All three proposed improvements - the Main and East Side Interceptor Replacements and the Mt. Vernon Street Sewer - are designed to carry only dry weather flows produced within their respective tributary areas. All sanitary flows in the Mt. Vernon Street area would be carried by the proposed sewer. Storm drainage would remain connected to the existing portion of the old Main Interceptor in Mt. Vernon Street. All connections to the proposed Interceptor Replacements except in certain special instances will be made through regulators, providing for diversion of combined overflows to existing stormwater overflow conduits.

Other mixed sewage and stormwater overflow treatment management plans being considered by the City in various areas include pollution abatement and flood control facilities and partial separation of the existing combined system. The improvements proposed herein do not conflict with these plans.

The proposed improvements, when combined with other improvements recommended in the 1967 Report and with a recently completed tide gate rehabilitation program, would eliminate the problem of dry weather overflows into

Boston Harbor. This is contingent upon implementation of a program of close attention to maintenance of regulators and tide gates.

Effects on Aquatic Biota and Habitats

The only locations where a direct effect of construction operations on aquatic life could occur is within Fort Point Channel and adjacent portions of the Boston Inner Harbor. The work of construction of the East Side Interceptor, North Branch, in Fort Point Channel is likely to disturb the silt bed of the channel and result in a temporary increase in turbidity with the possibility of toxic chemical constituents, if present in the sediment, entering into solution. During the work of construction, the most effective procedures available will be utilized to minimize the disturbance and spreading of silt laden waters.

Table IV-1 gives the results from the Boston Harbor Survey Logs, 1972, of a water sampling and analysis program conducted between June and October for the DWPC. The locations of the sampling stations listed in the table are indicated on Figure IV-1. The analyses show very high coliform counts, indicative of wastewater. Fort Point Channel now receives combined sewage and stormwater from the Roxbury Canal and Dorchester Brook conduits, and from combined overflows along the length of the channel. Phosphate counts are also high indicating the presence of phosphorus which induces growth of algal life, and results in a depletion of dissolved oxygen content of water in the channel. Four of the eight samples had a dissolved oxygen content less than the 3 mg/l minimum criteria for class SC waters as set by the DWPC. Both Fort Point Channel and the Inner Harbor have been classified by the DWPC as SC waters. Information on harbor water classification is included in the Appendices.

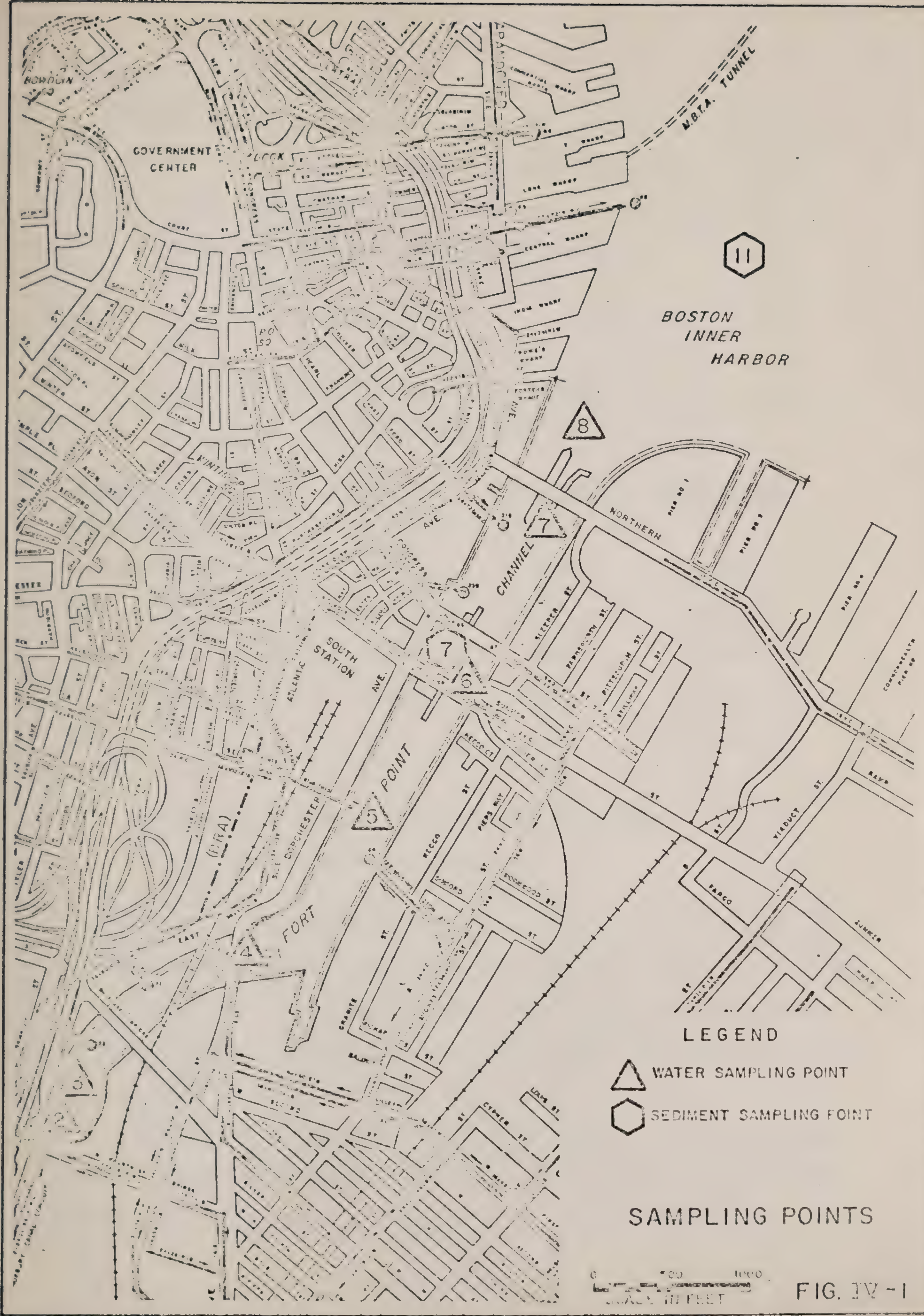
Table IV-1

WATER SAMPLING ANALYSES

Station	Location	A	B	C	D	E	F	G
1	Roxbury Canal Dorchester Brook Conduit	3	7,400,000	6,900,000	1.2	0	26	175
2	Dover Street Extended	5	2,400,000	620,000	0.6	1.3	25	50
3	Troy Street Extended	6	1,500,000	860,000	0.5	2.8	16	34
4	Dorchester Avenue Bridge	6	850,000	810,000	0.4	4.6	23	21
5	Kneeland Street Extended	6	5,300,000	1,900,000	0.4	3.4	12	57
6	Summer Street Extended	5	1,900,000	1,100,000	0.4	2.7	13	16
7	Oliver Street Extended	5	960,000	670,000	1.1	3.1	30	22
8	Mouth of Channel	5	219,000	160,000	0.2	4.3	29	2.6
	Desirable Levels	-	less than 2300	less than 2300	less than 0.07	more than 5.0	-	-

A = No. of Samples
B = Coliform mg/1 - Total
C = Coliform mg/1 - Fecal
D = Phosphates mg/1
E = Dissolved Oxygen mg/1
F = Biochemical Oxygen Demand mg/1
G = Total Suspended Solids mg/1

Source: Division of Water Pollution Control, Metropolitan Regional Office Boston Harbor Survey Logs 1972. Sampling Period June - October 1972. For location of Stations, See Fig. IV-1.



SAMPLING POINTS

FIG. IV-1

Table IV-2 shows the results of a Boston Transportation Planning Review analysis of sediments taken from Fort Point Channel near Summer Street (Station 7) and the Inner Harbor near the inlet of Fort Point Channel (Station 11). These two locations are indicated on Figure IV-1.

TABLE IV-2

Chemical Tests on Sediment Samples

(percent of dry weight)

Parameter	Station 7	Station 11	EPA Standard
Volatile Solids	39.4	8.4	6.0
Kjeldahl Nitrogen	3.9	0.24	0.10
COD	110.0	14.0	5.0
Lead	0.13	0.021	0.005
Oil and grease	0.68	0.30	0.15
Zinc	0.18	0.035	0.005
Mercury	--	--	0.0001

Source: Harbor Crossing, BTPR, September, 1972

For Location of Stations see Figure IV-1

A sediment sample taken by the BTPR from the middle of the channel at Northern Avenue indicates that approximately 80% of the sedimentary deposits will settle within a day or two following initial disturbance. The remainder settles much more slowly with about 10% (or 2% of total disturbed sedimentary deposits) going into solution.

The interceptor will be supported on piles within the channel, and dredging will be done where necessary to ensure proper support and grade. Silt curtains will be required to minimize spreading of the disturbed silt.

Effects on Water Quality of Boston Harbor

The nature of best practical wastewater treatment for the City of Boston is presently being debated. At this time wastewater receives primary treatment prior to ocean disposal. The water quality classifications for all sections of Boston Harbor are shown on a map, and excerpts from the Water Resources Commission, Division of Water Pollution Control Rules and Regulations concerning minimum water quality standards are appended. (Appendix N)

Treated wastewater from the Deer Island treatment facility is discharged to water designated as class SB. Combined wastewater and stormwater in excess of existing interceptor capacity is now discharged to the class SC water of the Boston Inner Harbor and the class SB waters of Dorchester Bay and the Outer Harbor. The proposed improvements will not change this condition to any great extent, but the provision of conduits with greater hydraulic capacity than the existing interceptors and proper maintenance of tide gates and regulators will reduce the occurrences and volumes of both dry weather and combined overflows. Local sewerage separation construction, if carried to the point of conducting collected storm water to receiving waters without re-connection to combined sewers, will aid the reduction of overflows of mixed wastewater and stormwater.

The installation of the Mt. Vernon Street Sewer will virtually eliminate the slug of septic sanitary sewage which may be discharged with each period of operation of the Calf Pasture pumping station.

At present, there are no shellfish growing areas within Boston Harbor from which shellfish may be legally taken so the continuance of combined sewage overflows will have no direct effect on shellfish growing areas.

When the proposed replacement interceptors are in operation, the possibility of system failure because of collapse of the old existing interceptors will be greatly reduced.

The redirecting of dry weather flows through the proposed East Side Interceptor Replacement, South Branch, and the Main Interceptor Replacement from the existing Main Interceptor at Albany Street makes available greater capacity there and in the existing Columbus Park Connection for flows from the southern portion of the South Boston Interceptor, North Branch, and the Dorchester Interceptor, thus reducing the incidence and volume of wastewater overflow from regulators on these interceptors into Dorchester Brook Conduit (to Fort Point Channel) and to Old Harbor and other parts of Dorchester Bay.

EFFECTS ON HYDROLOGY

Groundwater

Much of the route of the proposed improvements lies in filled land with groundwater levels which fluctuate with tidal conditions. Drawdown of the groundwater table during trench dewatering for construction will be confined to the immediate area of the trench due to the strong influence which the tidewater level exerts on local groundwater levels in these areas. Once construction is completed, groundwater levels will return to preconstruction conditions, and no permanent lowering of the groundwater table will result.

Fort Point Channel

The hydraulic effect of a 7 ft diameter conduit plus encasement installed in the Fort Point Channel in our opinion is so minor that it cannot be measured. At its narrowest point, the channel is approximately 300 ft wide. A small reduction in the channel's cross sectional area of flow will result in an infinitesimal increase in velocity of flow during incoming and ebbing tides with a not measurable decrease in the channel's capacity, and a miniscule lowering of the tide level range at the upper end at W. Fourth St. Bridge.

The recommended location of the interceptor replacement will allow for future construction and extension of the existing Roxbury Canal Conduit in the event that filling of the channel were to be continued northeast of W. Fourth St.

RECREATION, HISTORICAL, CULTURAL AND AESTHETIC VALUES

Upon completion of construction, the major portion of the proposed improvements will be below the ground surface or low tide level as noted below.

Where the East Side Interceptor Replacement, North Branch is routed along Fort Point Channel, the grade generally north of the Dorchester Avenue Bridge will be such that the pipe will be visible at low tide. It is proposed that fill be placed around and over the pipe to minimize the visual impact and to cover the resulting embankment with riprap for protection of the conduit.

Any construction outside of the existing channel bulkhead line will require an Act of Legislature. Any permanent structures below mean high water must be licensed with the Division of Waterways. Investigation must be made of the effects of the proposed interceptor replacement on the rights and licenses presently held by Channel abuttors to moor boats, extend wharves, or otherwise use waterspace along the existing bulkhead.

Where the proposed Main Interceptor crosses the northern portion of Columbus Park, use of a proposed baseball field, including water and drainage pipes, bleachers, fences and clubhouse may be temporarily disrupted. The ballfield is under the jurisdiction of the Boston Parks and Recreation Department and cooperation with the Department on this matter is anticipated. Columbus Park is not part of the historic Olmstead "Emerald Necklace" so there are no objections to construction within the park from an historic point of view. All measures will be taken to ensure that the park and ballfield will be returned to original condition upon completion of construction.

The South Station terminal building with its facade wall at the corner of Atlantic Avenue and Summer Street is the only historic site listed in the National Register of Historic Places which directly fronts on one of the proposed improvements. A proposed dry weather connection from two regulators in Atlantic Avenue to the East Side Interceptor Replacement will be

routed in Summer Street. No effect other than a temporary visual disruption due to construction will occur.

Other nearby historic sties which will not be affected by the project but which are listed here because of their proximity include the Custom House District, (bordered roughly by Court Street, Batterymarch Street, and the Fitzgerald Expressway), the South End District (bordered roughly by Columbus and Harrison Avenues between Massa c husetts Avenue and East Berkeley Street), a distance of 1000 ft from the East Side Interceptor Replacement and Dorchester Heights Park on Telegraph Hill, (which is not closer than 800 ft to the proposed Main Interceptor). The Bristol Street Fire Station may possibly be included in the National Register in the near future but this site is remotely located (800 ft) from the East Side Interceptor Replacement, North Branch.

Social and Economic Impact

The social and economic impact of improved sewerage facilities resulting from reduction of sewer surcharge levels will be felt throughout the portion of the Boston Main Drainage District to be served by the proposed Main and East Side Interceptor Replacements. The danger of surcharge, with attendant possibility of flooding of cellars and low alleys with combined wastewater is a distinct but uncalculable benefit.

The decrease in frequency of occurrence and volume of overflows of mixed wastewater and stormwater will beneficially affect the quality of water in the adjacent channel and harbor waters, and thus increase aesthetic enjoyment and opportunity for harbor boating and other water-based sports.

Effect on Commercial and Industrial Establishments

During construction in the channel, water quality may temporarily deteriorate due to disturbance of the silt bed as previously mentioned. At present, at least three commercial or industrial operations use the channel's water. The Hook and Neptune Lobster Companies circulate sea water through their lobster tanks and the Gillette Company uses sea water for cooling. Increased turbidity and a rise in the level of dissolved chemicals (Table IV-2) could temporarily but significantly affect the operations of these firms. The Aquarium, about 2000' north of Northern Avenue uses harbor water for circulation after treatment, and might be remotely affected. Careful construction techniques, programming of operations, and the use of silt barriers will reduce these potentially harmful effects.

For the remainder of the route, social and economic impact of construction is confined to the effects of rerouting traffic while construction takes place in Atlantic Avenue, Milhender Place, Dorchester Avenue, Old Colony Avenue and the many bridges across Fort Point Channel. Access to some commercial and industrial establishments will be temporarily impaired but not rendered impassable.

Expenses to City of Boston

Total estimated project cost is presented in Chapter II. Much of these costs are expected to be borne by Federal and State Agencies. The impact of the City's share of the project costs on its property tax rate over the life of the bonds has yet to be determined.

Operation and maintenance costs should be no more than those normally associated with sewer cleaning and maintenance. Additions to the sewer

maintenance staff should not be necessary solely because of the construction of the proposed interceptor replacements although additional time and perhaps, personnel will be required to implement the recommended tidegate and regulator maintenance program. The actual cost to the city in terms of the increase in total sewer maintenance costs should be minimal.

Induced Growth

The proposed interceptor conduits are intended as replacements for existing interceptors. The Mt. Vernon Street Sewer is to provide for collection of sanitary wastewater which is presently being collected under less than ideal conditions, as described in the 1967 and 1972 Reports. The interceptor replacements and the sewer are designed to convey only the dry weather flows from their respective tributary areas and as such will not, of themselves, increase the rates of wastewater generation. New developments within each area, in most cases, will connect to existing local sewers discharging through regulators but not directly to the interceptors. Thus, the limiting factors affecting total flow in the interceptor replacements remain with the existing local sewers. The location of collecting sewers, improved in operation by provision of interceptor facilities of adequate capacity should have a mild affect in inducing growth.

In the short reaches where the alignments of the proposed improvements pass through open, privately owned land, permanent easements will be acquired and therefore future development directly over the improvements will be restricted.

Construction within Fort Point Channel may affect rights which some abuttors hold to build wharves or other structures beyond the existing bulkhead line. The procurement of easements may be necessary where these rights exist, thus somewhat restricting growth.

LANDSCAPE AND LAND-BASED ECOSYSTEMS

The effect of the proposed improvements on the landscape along the conduit alignments is expected to be temporary. Wherever trenching occurs, every effort will be taken to restore the disturbed land to preconstruction conditions and contours. Repaving or loaming and seeding will be done where necessary.

Disruption of land-based ecosystems is expected to be minimal. South of Fort Point Channel, the route of the proposed East Side Interceptor Replacement is through presently open land to Massachusetts Avenue. There is no vegetation cover on most of this land and wildlife in the area is limited to insects and rodents.

Some wild grasses grow along the route of the proposed Main Interceptor Replacement between its connection with the East Side Interceptor Replacement and the crossing of the New York, New Haven and Hartford Railroad Tracks. Again, construction is not expected to upset the limited land-based ecosystems in operation.

No woodlands, meadows or swamplands lie along the proposed alignment.

NOISE

Except for noise temporarily generated by construction, the proposed improvements will not cause a rise in noise levels in the project area. Construction noise levels will be discussed in the next section.

CONSTRUCTION IMPACTS

Fort Point Channel

Impact of construction on water quality in Fort Point Channel has been discussed in the Water Quality section of this assessment. To lay the pipe at the proper grade in the channel, some dredging will be required.

Fill to surround the pipe could be obtained from suitable excess material excavated from the remainder of the alignment and additional fill, if required, will be obtained from suitable authorized borrow pits or suppliers in the Boston area. Approximately 5120 linear feet of pipe will be laid in the Channel.

Both the U.S. Coast Guard and the Army Corps of Engineers have been contacted regarding the installation of the proposed interceptor replacement in the channel. The Coast Guard is not concerned with the construction since the interceptor does not cross the navigable portion of the channel. The Corps of Engineers representative stated that the project will not interfere with any plans it has regarding the channel. An act of the legislature will be required, however, before construction within the channel can be started, and permits must be obtained from the Massachusetts DPW and the Corps of Engineers.

Much of the construction work can be conducted from barges. Portions of the channel along the proposed alignment will be dredged to insure proper grade. North of the Dorchester Avenue Bridge, the pipe will be laid near the existing bulkhead wall. The existing bulkhead will be reinforced, if necessary, with wall anchors to insure against collapse or displacement during dredging and pile driving operations. The pipe will be supported in a cradle on a platform supported by piles. Fill material and riprap will cover the pipe minimizing its visual impact at low tide.

Despite precautions to be observed during construction as mentioned in the Water Quality section of this chapter, a temporary, unmeasurable deterioration of water quality in the channel could occur, possibly affecting the operation of firms which use channel water, as discussed hereinbefore.

Remainder of the Alignment

Of the remainder of the alignment, other than in the channel, approximately 7620 feet will lie in paved roads and approximately 8985 feet will lie in open land and railroad yards.

Every effort will be made to minimize disruption of rail traffic during construction. Overland and in-street construction will be accomplished by the trench and backfill method. Much of the length of the pipelines will be supported by piles.

Two crossings of the MBTA's "Red Line" tunnel will be accomplished. The first crossing is of an unreinforced concrete compression ring tunnel by the proposed East Side Interceptor Replacement, North Branch in the Fort Point Channel at Summer Street. The proposed interceptor replacement will pass over the subway tunnel without imposing any load on the tunnel. Approximately 100 linear feet of dredging will occur above the tunnel and a small imbalance of forces may occur during the dewatering associated with construction. Upon completion of construction, hydrostatic forces on the tunnel will return to preconstruction balance. The second crossing is by the proposed Main Interceptor Replacement at Dorchester Avenue and Milhender Place. This crossing will be accomplished as an inverted siphon of several tubes under the tunnel. Construction might be by jacking methods to minimize the temporary imbalance of forces acting on the tunnel.

Traffic disruption during construction will take place in Atlantic Avenue from India Wharf to Foster's Wharf, in Milhender Place, at the crossing at Dorchester Avenue, in Old Colony Avenue from Dorchester Avenue to Vinton Street, in Columbia Road at the crossing from Old Colony Avenue to Columbus Park, and in Mt. Vernon Street from Kosciuszko Circle to Monticello Avenue. Adequate room for vehicular passage during construction will

be available in all of the above-mentioned locations except Old Colony Avenue, where detours through numerous sidestreets are available. Trenches will be protected by barriers and lights and covered, as necessary, with steel plates to facilitate movement of traffic during the morning and evening rush hours.

Construction effects of placing the pipe across the northern portion of Columbus Park are mentioned under the Recreation, Historical, Cultural and Aesthetic Values section of this chapter.

Grading, loaming and seeding will be done wherever necessary to restore overland portions of the alignment to preconstruction conditions.

Where the alignment runs through streets and other paved areas, repaving will be done to insure a suitable surface for passage of vehicles.

Construction Noise

Present noise levels along the alignment are those typical of a well-developed urban area. Ambient noise level is due to traffic at and at some distance away from the sites, and intermittent local increases in the noise levels are caused by passing cars and trucks. A major portion of the proposed East Side Interceptor Replacement extends adjacent to the Fitzgerald Expressway and a major portion of the proposed Main Interceptor Replacement extends in Old Colony Avenue, a major traffic artery in South Boston. Portions of the proposed Main Interceptor are located in the Food Mart area with noise being generated by constant truck and railroad traffic. Mt. Vernon Street is heavily travelled because it is the only access road to the Columbia Point housing project. There are no sections of the proposed alignments which can be considered isolated from the effects of traffic noise.

During construction of the interceptors, noise will be produced by operation of construction equipment and delivery of materials. Every effort will be taken to keep construction noise levels to a minimum. This is particularly important in the vicinity of the Boston City Hospital in Massachusetts Avenue. Throughout the work, the contractor will be required to comply with the City of Boston Construction Noise Regulations (effective June 1, 1975).

Alternatives Considered

Consideration was given to placing a portion of the proposed Main Interceptor Replacement in Columbia Road instead of through Columbus Park. This alternative was eliminated however, because Columbia Road is a major access route to South Boston and traffic disruption would have severe effects, and repaving the roadway would be more expensive than regrassing.

Consideration was also given earlier to placing the North Branch of the East Side Interceptor Replacement in and west of Dorchester Avenue and not in Fort Point Channel. However, water handling problems would be as severe as those encountered within the channel, and the additional problems of crossing active railroad tracks and utility conduits, of construction beneath granite sea walls and an abandoned ramp to the lower level of South Station, and traffic disruption would have to be met.

Alternatives to the major routes are discussed in Chapter II.

PROBABLE UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

All probably unavoidable adverse environmental effects are temporary and are related to construction operations.

One such unavoidable effect is the disturbance of the silt bed of Fort Point Channel. As was stated earlier, all practical methods will be taken to minimize the disturbance of the silt bed and the spread of silt laden waters.

A second is the temporary disturbance to the Columbus Park baseball field. The field will be returned to original condition after completion of work in the area.

Third is the temporary disturbance of truck, automotive and rail traffic on land and the possible interference with navigation in the north section of the channel due to the presence of construction barges. There is no marine traffic in the southerly section.

Another unavoidable effect is construction noise. Along the entire alignment, the contribution of construction noise should not significantly raise the average noise levels along the route since average noise levels are already high due to heavy traffic.

All of these construction effects will be localized and short-lived with no permanent side effects.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The construction and operation of the proposed Main and East Side Interceptor Replacements and the Mt. Vernon Street Sewer will have both short and long-term benefits.

Immediate benefits realized by the construction of the Interceptor Replacements include reduced incidences of dry weather overflows of untreated sanitary sewage into Boston Harbor and adjacent waters and increased system reliability due to the structural soundness of the new conduits. The immediate benefit from the construction of the Mt. Vernon Street Sewer is the proper aerobic operation of the dry weather sanitary sewage collection system. The present system in Mt. Vernon Street as

described in the 1972 report update requires considerable retention of dry weather sanitary flow under septic conditions before discharge northwesterly through the existing MDC Diversion Chamber to the Columbus Park Connection. The discharge of this untreated septic sewage to the harbor during each operating period of the Calf Pasture Pumping Station would also be reduced, and the need for a chlorination station much reduced.

The long-term benefits realized by the construction of the Interceptor Replacements must be evaluated in the light of the fact that these replacements are a first step in a comprehensive plan for improvements to the principal conduits of the Boston Main Drainage System.

A tradeoff to some extent occurs, however, since land use of the easements through which the overland portions of these improvements run will be restricted in the future. The land involved however is presently open or used for parking and movement of trucks and trains and these uses will not be restricted in the future. Most of it is directly adjacent to the Fitzgerald Expressway making it less than ideal for extensive future development.

The short and long term benefits to the community as a whole far outweigh the restrictions that construction would place on future land use.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Committed to this project are approximately 26,750 linear feet of reinforced concrete pipe and pipe of other materials including connections. Many thousands of manhours of work in manufacturing of pipe and other materials and design and construction of the conduit; and natural resources,

such as energy, limestone for cement, steel, crushed stone, wooden sheeting and piles are committed resources and cannot be retrieved. They are however, expended deliberately in this project for the benefit of society.

Approximately 9000 linear feet of underdeveloped land must be taken and restrictions must be placed on future use of that land, in effect irreversibly committing it to the project.

CHAPTER V

ASSISTANCE TO CITY

Assistance is being given to the City in the preparation of revisions to its existing sewer-use ordinance, revisions to its regulations for sewer user charges, and for the drafting of industrial cost recovery regulations.

The revised sewer use ordinance is a revision of the existing City ordinance, Chapter 5 - Public Works Department, Sewerage, Sections 152 through 163 (Appendix P), to follow the requirements of the NPDES discharge permit, and in particular, Section 20, page GC-8, Sewer Ordinance therein, and other pertinent EPA, Massachusetts DWPC, and MDC regulations.

The revised regulations for sewer user charges are based on the current City ordinances, and in particular Ordinances of 1961, Establishing Annual Charges for the Use of Common Sewers, and Ordinances of 1962, Relative to the Annual Charges for the Use of Common Sewers, as amended.

Industrial cost recovery regulations, as well as the existing sewer-use regulations, will be completed when legislation now pending for the MDC (HR-5759, April 8, 1975), (Appendix C), is enacted, and to follow the regulations of EPA set forth in Title 40, Chapter I, Subchapter 1, Part 35, Subpart E, Grants for Construction of Treatment Works, Federal Water Pollution Control Act Amendments of 1972, User Charges and Industrial Cost Recovery.

Industrial cost recovery agreements will be made with industries as required.

CHAPTER VI

INDUSTRIAL WASTES SURVEY

Industrial Wastes Surveys

The Metropolitan District Commission has engaged a consultant to conduct an industrial wastes survey within the MDC service area. The data collected in this survey is classified strictly confidential and are not available for public review. The MDC states that this Report will not be an extensive in-depth study. It will cover major industries with waste discharges of 50,000 gpd or more (EPA "Major Contributing Industries"), and those having 250 or more employees. About 100 industries were canvassed by questionnaire and this information has been used statistically to represent industrial wastes generated in the service area. We have not had access to this information.

In addition to the consultant's report, the MDC is now conducting an industrial wastes survey of its own. This survey appears to be much more extensive than the consultant's. About 3500 questionnaires have been sent out to industries, and the MDC states that 7000 to 8000 responses are anticipated based on the current rate of return from subdivisions within industries. Inspection of each industry is to be conducted as part of the MDC study. To date the MDC has made on-site inspections of about 800 industries.

The MDC has classified industries by use of its 1945 Rules and Regulations. Where a local ordinance is in existence, the more stringent criteria would be used for connectors to the system.

An industrial wastes survey in Boston was conducted by CDM in conjunction with the 1967 Report Improvements to the Boston Main Drainage System. Forty-one

companies were contacted and 32 responded with sufficient data for development of design criteria used in that report. Average daily wastewater flows ranging from 7300 to 405,000 gpad were determined. A summary of the study can be found there on pages 69 through 75 of the 1967 report.

APPENDICES

APPENDICES

Appendix	
A	South End Urban Renewal Area BRA (C.E. Maguire Inc.)
B	South Cove Urban Renewal Area BRA (Charles T. Main Inc.)
C	Downtown Waterfront BRA (Schoenfeld Assoc. Inc.)
D	Statement from MDC Certifying to Capacity, (Nov. 19, 1975)
E	Record of Public Participation
F	Copies of Certificates from City - Authority to File Request for Construction Grant -Compliance with Civil Rights -Assurance of Civil Rights
G	State Clearing House Notice of Intent Form (A-95) (Nov. 20, 1975)
H	Information in Regard to Legislation
I	Availability of Route Segments
J	Approval of CDM 1967 Report Letter, Dec. 5, 1967, Massachusetts DWPC
K	Copy of NPDES permit to City of Boston April 2, 1975 Federal: MA-010192 Massachusetts: M-121 Application No. M-124
L	Copy of Letters Attesting to Eligibility - March 28, 1972 - April 30, 1975 - June 16, 1975
M	Sewer Ordinance Revision - Extract from Chapter 5 - Public Works Department, (Paragraphs 152 - 163)

N	Water Quality Classification (Massachusetts DWPC)
O	Industrial Cost Recovery and User Charges for Operation and Maintenance, Legislation Pending, (HR 5759)

APPENDIX A

South End Urban Renewal Area

(C.E. Maguire Inc.)

(Copy submitted herewith)

APPENDIX B

South Cove Urban Renewal Area

(Charles T. Main, Inc.)

(Copy submitted herewith)

APPENDIX C

Downtown Waterfront Urban Renewal Area

(Schoenfield Assoc. Inc.)

(Copy submitted herewith)

APPENDIX D

Statement from MDC Certifying to Capacity

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

November 19, 1975

Joseph F. Casazza, Commissioner
Public Works Department
City of Boston
One City Hall Square
Boston, Massachusetts 02201

Dear Sir:

In the matter of improvements to the Boston Main Drainage System with special reference to the new East Side Interceptors and discharge to the M.D.C. Columbus Park Headworks your consultant has requested a statement as to the ability of the Headworks to accommodate the new sewers.

While the replacement sewers are larger than the existing sewers they will not add any territory to the present drainage area. Therefore I do not expect the average dry weather flow to be significantly increased in the near future. According to our fiscal 1975 annual report there is about 13 mgd of capacity available until the average daily design flow is reached.

Very truly yours,

AC Hayes

A. C. Hayes
Director of Sewerage Division
and Chief Sewerage Engineer

ACH:dlm

APPENDIX E

Public Participation

CAMP DRESSER & McKEE
Inc.
CONSULTING ENGINEERS
NE CENTER PLAZA BOSTON, MASS. 02108 TEL. 617 742-5151 CABLE: CAMDRES

CHARLES A. PARTHUM
Senior Vice President

18 November 1975

Commissioner Joseph F. Casazza
Public Works Department
City of Boston
City Hall
Boston MA 02201

Boston, Massachusetts
1975 Supplement to 1967 Report on
Improvements to the Boston Main
Drainage System (Facilities Plan)
Public Participation

Dear Commissioner Casazza:

One of the major requirements of the submission of an application for a construction grant for waste treatment works, including intercepting sewers, is the holding of one or more public hearings, in accordance with Section 35.917 - 5, Public Participation, PL 92-500, 33 USC, 1251 it seq., Title 40, Chapter 1, Subchapter B, Part 35, State and Local Assistance. A copy of the text is appended for convenience.

Under Subparagraph (a) a public hearing is required before the start of the planning process. This would have been necessary in 1966 when studies for the comprehensive report were initiated.

Subparagraph (b) requires a public hearing to "be held prior to the adoption of the facilities plan by the implementing governmental units." The hearing should be announced by adequate advertising at least 30 days in advance, and a description of the "water quality problems and principal alternatives" must be publicly displayed.

The appropriate federal and state agencies and others listed in the regulation should be notified by written notice, preferably accompanied by copies of the summary of the display material.

We plan to prepare the display material with the completion of the facilities plan.

The public notification should be issued as soon as the display material is available for distribution.

Very truly yours,
CAMP DRESSER & MCKEE Inc.

Charles A. Parthum

257-24-RT
LWR/cm
Encl.

ER RESOURCES • WATER SUPPLY AND TREATMENT • SEWERAGE AND SEWAGE TREATMENT • INDUSTRIAL WASTE TREATMENT
RAINAGE AND FLOOD CONTROL • WATER AND AIR POLLUTION CONTROL • REFUSE DISPOSAL • RESEARCH AND DEVELOPMENT

(3) An evaluation of improved effluent quality attainable by upgrading the operation and maintenance and efficiency of existing facilities as an alternative or supplement to construction of new facilities;

(4) An evaluation of the capability of each alternative to meet applicable effluent limitations. The treatment works design must be based upon not less than secondary treatment as defined by the Administrator pursuant to sections 301(a)(1)(B) and 304(d)(1) of the Act;

(5) An identification of, and provision for, applying the best practicable waste treatment technology (BPWTT) as defined by the Administrator, based upon an evaluation of technologies included under each of the following waste treatment management techniques:

(i) Biological or physical-chemical treatment and discharge to receiving waters;

(ii) Treatment and reuse; and

(iii) Land application techniques.

All Step 2, Step 3 or combination Step 2–3 projects for publicly-owned treatment works construction from funds authorized for any fiscal year beginning after June 30, 1974, shall be based upon application of BPWTT, as a minimum. Where application of BPWTT would not meet water quality standards, the facilities plan shall provide for attaining such standards. Such provision shall consider the alternative of treating combined sewer overflows.

(6) An evaluation of the alternative means by which ultimate disposal can be effected for treated wastewater and for sludge materials resulting from the treatment process, and a determination of the means chosen.

(7) An adequate assessment of the expected environmental impact of alternatives including sites pursuant to Part 6 of this Chapter. This assessment shall be revised as necessary to include information developed during subsequent project steps.

(e) An identification of effluent discharge limitations, or where a permit has been issued, a copy of the permit for the proposed treatment works as required by the National Pollution Discharge Elimination System.

(f) Required comments or approvals of relevant State, interstate, regional, and local agencies.

(g) A brief summary of any public meeting or hearing held during the planning process including a summary of the views expressed.

(h) A brief statement demonstrating that the authorities which will be implementing the plan have the necessary legal, financial, institutional, and managerial resources available to insure the construction, operation, and maintenance of the proposed treatment works.

(i) A statement specifying that the requirements of Title VI of the Civil Rights Act of 1964 and of Part 7 of this chapter have been satisfied.

§ 35.917–2 State responsibilities.

(a) *Facilities planning areas.* Facilities planning should focus upon the geographic area to be served by the waste treatment system(s) of which the proposed treatment works will be an integral part. The facilities plan should include that area deemed necessary to prepare an environmental assessment and to assure that the most cost-effective means of achieving the established water quality goals can be planned for and implemented. To assure that facilities planning initiated after April 30, 1974, subsequent to award of a Step 1 grant therefor, and all facilities planning initiated after October 31, 1974, will include the appropriate geographic areas, the State shall:

(1) Delineate, as a preliminary basis for planning, the boundaries of the planning areas. In the determination of each area, appropriate attention should be given to including the entire area where cost savings, other management advantages, or environmental gains may result from interconnection of individual waste treatment systems or collective management of such systems.

(2) Include maps, which shall be updated annually, showing the identified areas and boundary determinations as part of the State submission under section 106 of the Act.

(3) Consult with local officials in making the area and boundary determinations.

(b) *Facilities planning priorities.* The State shall establish funding priorities for facilities planning in accordance with §§ 35.915 and 35.554–3(a)(1).

§ 35.917–3 Federal assistance.

(a) *General.* Facilities planning initiated after April 30, 1974, subsequent to award of a Step 1 grant therefor, and all facilities planning initiated after October 31, 1974, must be developed pursuant to a plan of study (see § 35.920–3(a)(1)) approved in accordance with the requirements of this subpart prior to initiation of the facilities planning. A preapplication conference may be held in accordance with § 35.920–2.

(1) An applicant may apply for a grant for a Step 1 project for the preparation of a facilities plan, or any component part, and for other Step 1 elements required to submit a complete application for a Step 2 project (see § 35.920–3(b)). Alternatively, to the extent permitted by § 35.925–18, a grantee may be reimbursed for facilities planning costs and other Step 1 elements for which reasonable costs have been incurred in accordance with this subpart, in conjunction with the award of a grant for the subsequent Step 2, Step 2–3, or Step 3 projects.

(2) State priority determination in accordance with the approved State priority system pursuant to § 35.915 is required for Step 1 projects, just as in the case of Step 2 or Step 3 projects.

(b) *Eligibility.* Only an applicant which is eligible to receive grant assistance for subsequent phases of construction (Steps 2 and 3) and which has the legal authority to subsequently construct, operate, and maintain the facilities may apply for grant assistance for Step 1. If the area to be covered by the facilities plan includes more than one political jurisdiction, a grant may be awarded for a Step 1 project, as appropriate, (1) to the joint authority representing such jurisdictions, if eligible; (2) to one qualified (lead agency) applicant; or (3) to two or more eligible jurisdictions.

(c) *Payment.* Where a grant has been awarded for the preparation of a facilities plan or other Step 1 elements, the payment schedule in the grant agreement will provide for payment upon completion of the Step 1 work or upon completion of specified tasks within the scope of the project.

(d) *Reports.* Where a grant has been awarded for facilities planning, the completion of which is expected to require more than one year, the grantee must submit a brief progress report to the Regional Administrator at three-month intervals. The progress report is to contain a minimum of narrative description, and is to describe progress in completing the approved schedule of specific tasks for the project.

§ 35.917–4 Planning scope and detail.

(a) Initially, the geographic scope of all facilities planning initiated after October 31, 1974, or facilities planning initiated after April 30, 1974, subsequent to award of a Step 1 grant therefor, shall be based upon the area delineated by the State pursuant to § 35.917–2, subject to review by the Regional Administrator. The Regional Administrator may make the preliminary delineation of the boundaries of the planning area, if the State has not done so, or may revise boundaries selected by the locality or State agency, after appropriate consultation with State and local officials.

(b) Facilities planning shall be conducted only to the extent that the Regional Administrator determines to be necessary to insure that facilities for which grants are awarded will be cost-effective and environmentally sound and to permit reasonable evaluation of grant applications and subsequent preparation of designs, construction drawings and specifications.

§ 35.917–5 Public participation.

(a) Public participation in the facilities planning process shall be consistent with Part 105 of this chapter. One or more public hearings or meetings should be held within the area to obtain public advice at the beginning of the planning process. All governmental agencies and other parties which are known to be concerned or may have an interest in the plan shall be invited to participate.

(b) A public hearing shall be held prior to the adoption of the facilities plan by the implementing governmental units. This provision shall apply to all facilities planning initiated after April 30, 1974. This public hearing for the

facilities plan may satisfy the grantee hearing requirement of Part 6 of this chapter. The Regional Administrator may require the planning entity to hold additional public hearings, if needed, to more fully discuss the plan and alternatives or to afford concerned interests adequate opportunity to express their views.

(c) The time and place of the public hearing shall be conspicuously and adequately announced, generally at least 30 days in advance. In addition, a description of the water quality problems and the principal alternatives considered in the planning process shall be displayed at a convenient local site sufficiently prior to the hearing (approximately 15 days).

(d) Appropriate local and State agencies, State and regional clearinghouses, interested environmental groups and appropriate local public officials should receive written notice of public hearings.

(e) A request to waive the hearings on a facilities plan may be submitted to the Regional Administrator in writing prior to submission of the plan. Any such request will be acted upon within 30 days by the Regional Administrator. Each request must include a brief description of the alternatives, the area that will be serviced, the scope and dates of meetings and hearings previously held, and the reasons the grantee feels a public hearing would not serve the public interest.

§ 35.917–6 Acceptance by implementing governmental units.

A facilities plan submitted for approval shall include adopted resolutions or, where applicable, executed agreements of the implementing governmental units or management agencies providing for acceptance of the plan, or assurances that it will be carried out, and statements of legal authority necessary for plan implementation. Any departures from these requirements may be approved by the Regional Administrator prior to plan submission.

§ 35.917–7 State review and certification of facilities plan.

Each facilities plan must be submitted to the State agency for review. The State must certify that (a) the plan conforms with the requirements set forth in this subpart; (b) the plan conforms with any existing final basin plans approved under section 303(e) of the Act; (c) any concerned 208 planning agency has been afforded the opportunity to comment upon the plan; and (d) the plan conforms with any waste treatment management plan approved pursuant to section 208(b) of the Act.

§ 35.917–8 Submission and approval of facilities plan.

The completed facilities plan must be submitted by the State agency and approved by the Regional Administrator. Where deficiencies in a facilities plan are discovered, the Regional Administrator shall promptly notify the State and the grantee or applicant in writing of the nature of such deficiencies and of the recommended course of action to correct such deficiencies. Approval of a plan of study or a facilities plan will not constitute an obligation of the United States for any Step 2, Step 3, or combination Steps 2 and 3 project

§ 35.917–9 Revision or amendment of facilities plan.

A facilities plan may include more than one Step 3 project and provide the basis for several subsequent Step 2, Step 2–3, or Step 3 projects. A facilities plan which has served as the basis for the award of a grant for a Step 2, Step 2–3, or Step 3 project shall be reviewed prior to the award of any grant for a subsequent project involving Step 2 or Step 3 to determine if substantial changes have occurred. If in the judgment of the Regional Administrator substantial changes have occurred which warrant revision or amendment, the plan shall be revised or amended and submitted for review in the same manner specified in this subpart.

§ 35.920 Grant application.

Grant applications will be submitted and evaluated in accordance with Part 30, Subpart B of this chapter.

§ 35.920–1 Eligibility.

Municipalities, intermunicipal agencies, States, or interstate agencies may apply for grant assistance.

§ 35.920–2 Procedure.

Preapplication assistance, including, where appropriate, a preapplication conference, should be requested from the State agency or the appropriate EPA Regional Office for each project for which State priority has been determined. An application must be submitted to the State agency for each proposed treatment works. The basic application shall meet the requirements for the project set forth in § 35.920–3. Submissions required for subsequent related projects shall be provided in the form of amendments to the basic application. Each such submission shall be submitted through the State agency, must be complete (see § 35.920–3), and must relate to a project for which priority has been determined in accordance with § 35.915. If any information required pursuant to § 35.920–3 has been furnished with an earlier application, the applicant need only incorporate by reference and, if necessary update or revise such information utilizing the previously approved application.

§ 35.920–3 Contents of application.

(a) Step 1. Facilities plan and related elements required to apply for Step 2 grant assistance. An application for a grant for Step 1 shall include:

(1) A plan of study presenting (i) the proposed planning area; (ii) an identification of the entity or entities that will be conducting the planning; (iii) the nature and scope of the proposed Step 1 project, including a schedule for the completion of specific tasks; and (iv) an itemized description of the estimated costs for the project;

(2) Proposed subagreements, or an explanation of the intended method of awarding subagreements for performance of any substantial portion of the project work;

(3) Required comments or approvals of relevant State, local, and Federal agencies (including "clearinghouse" requirements of OMB Circular A-95, promulgated at 38 FR 32874 on November 28, 1973).

(b) Step 2. Preparation of construction drawings and specifications. Prior to the award of a grant or grant amendment for a Step 2 project, the following must have been furnished:

(1) A facilities plan (including an environmental assessment in accordance with Part 6 of this chapter) in accordance with §§ 35.917 through 35.917-9.

(2) Satisfactory evidence of compliance with the user charge provisions of §§ 35.925–11 and 35.935–13;

(3) Satisfactory evidence of compliance with the industrial cost recovery provisions of §§ 35.925–12, 35.928, and 35.935–13, if applicable;

(4) A statement regarding availability of the proposed site, if relevant;

(5) Satisfactory evidence of a proposed or existing program for compliance with the Relocation and Land Acquisition Policies Act of 1970 in accordance with § 30.403(d) and Part 4 of this chapter, if applicable;

(6) Satisfactory evidence of compliance with other applicable Federal statutory and regulatory requirements (see Part 30, Subpart C of this chapter);

(7) Proposed subagreements or an explanation of the intended method of awarding subagreements for performance of any substantial portion of the project work.

(8) Required comments or approvals of relevant State, local, and Federal agencies (including "clearinghouse" requirements of OMB Circular A-95) if a grant application has not been previously submitted.

(c) *Step* 3. Building and erection of a treatment works. Prior to the award of a grant or grant amendment for a Step 3 project, each of the items specified in paragraph (b) of this section, and in addition (1) two sets of construction drawings and specifications, suitable for bidding purposes, and (2) a schedule for or evidence of compliance with §§ 35.925–10 and 35.935–12 concerning an operation and maintenance program, must have been furnished.

(d) *Step* 2/3. Design/Construct Project. Prior to the award of a grant or grant amendment for a design/construct project the items in paragraphs (b) and (c) of this section must have been furnished, except that, in lieu of construction drawings and specifications, the proposed performance specifications and other relevant design/construct criteria for the project must have been submitted.

(e) *Training facility project.* An application for grant assistance for construction of a training facility pursuant to section 109(b) of the Act shall include (1) a statement concerning the [illegible] of the treatment works facility and

APPENDIX F

Copies of Certificates by City

- Authority to File for Construction Grant
- Compliance with Civil Rights Act
- Assurance of Civil Rights

(Copy to be Provided by City)

APPENDIX G

State Clearing House

Notice of Intent, (A-95)

November 20, 1975

NOTICE OF INTENT FORM

apply for federal funds for programs covered by the Office of Management and Budget (OMB) Circular A-9

To be filed at least 30 days prior to submission to federal agency.

LICANT: [illegible]

dress: [illegible]

Telephone Number: [illegible]

me and Title of Person to Receive Correspondence: [illegible]

ame and Title of Contact Person: [illegible]

FUNDING AGENCY: [illegible]

Federal Catalogue Program Number: 66.41[illegible]

Estimated Date of Submission to Federal Agency: January 197[illegible]

OJECT TITLE: [illegible] Main Drainage System

Location of Project/Impact Area: Boston, Massachusetts

Starting Date and Project Duration: [illegible]

* Costs for Step II Grant will be submitted upon selection of engineers.

FUNDING REQUEST:

Federal:

State:

Local:

Other:

Total:

JECT SUMMARY:

Please include at a minimum: narrative description of project, budget and/or cost estimate, and locus map (where applicable). The narrative might include a statement of need, program objectives, coordination with other agencies, citizen involvement, past performance (in the case of continuing programs), and environmental assessment where appropriate. Please use additional sheets if necessary.

Project involves replacement of the existing East Side Interceptor and Boston Main Interceptor, and construction of a sanitary sewer in Mt. Vernon Street. The proposed conduits would prevent dry weather overflow of raw sewage and allow abandonment of sections of existing interceptors. The construction of the proposed facilities is required for [illegible] hydraulic and structural reasons. The existing Main Drainage System was constructed [illegible] 1877 and 1884. Structural failures have occurred, the most notable being those of [illegible] Interceptor in Massachusetts Avenue and at Kosciuszko Circle. The system is frequently surcharged [illegible] sanitary wastewater, stormwater, and tidewater which results in overflow [illegible] pollution of Boston Harbor.

The total length of conduits and connections is [illegible],710'. Interceptor replacement [illegible] in size from [illegible] to [illegible] in diameter. The total estimated cost of the proposed facilities including construction cost and allowances for engineering and general contingencies [illegible] 7,7[illegible].

Sent to OSP and Metropolitan Area Planning Council on [illegible]
(Name of Regional Clearinghouse) (Date)

Prepared by Camp Dresser & McKee Inc.
(Type or print name)
for City of Boston

(Signature)
[illegible]

NOTE: Send white copy to State Clearinghouse, Office of State Planning, Room 2101, One Ashburton Place, Boston, MA 02108. (Phone: 617-727-4154) Send yellow copy to regional clearinghouse, retain pink copy for your records.

To be filled in by State Clearinghouse SCI:

APPENDIX H

Information in Regard to Legislation

CAMP DRESSER & McKEE
Inc.

ENVIRONMENTAL ENGINEERS

ONE CENTER PLAZA BOSTON, MA 02108 TEL. 617 742-5151 CABLE: CAMDRES

20 November 1975

Commissioner Joseph F. Casazza
Public Works Division
City of Boston
City Hall
Boston MA 02201

Attn: James A. O'Rourke
Division Engineer

Boston, MA
Update of Report on Improvements
to the Boston Main Drainage System

Dear Commissioner Casazza:

This letter is sent to notify you of information received from the Massachusetts Department of Environmental Quality Engineering, Division of Waterways regarding the alignment of the proposed East Side Interceptor Replacement, North Branch, in Fort Point Channel. Mr. John J. Hannon, Acting Deputy Chief Engineer, has informed us that an act of legislature would be required for any permanent structure constructed beyond the present State Harbor Line which in this reach is also the U.S. Pierhead and Bulkhead Line. The present line from the vicinity of Northern Avenue Bridge to the Dorchester Avenue Bridge was established by Section 2, Chapter 170 of the Acts of 1888. The line has been altered in the vicinity of the Dorchester Avenue Bridge by Chapter 278 of the Acts of 1929.

It should be noted that reconstruction of the Northern Avenue Bridge in the near future is now planned to include an embankment to extend beyond the present State Harbor Line. Knowledge of legislation required for this planned construction may be helpful in drafting legislation for our proposed construction.

In addition, the Division of Waterways has also informed us that any permanent structure to be located in Fort Point Channel must be licensed. The authorization for this requirement is given in accordance with the provisions of Chapter 91 of the General Laws. Under the law a license must be recorded in the appropriate Registry of Deeds.

We suggest that your Legal Department be notified of these requirements and perhaps begin to draft the required legislation. We would of course give our assistance were it ever required.

Should you require more information at this time please call us.

Very truly yours,

CAMP DRESSER & MCKEE Inc.

L.W. Ryder

L.W. Ryder

RML/cm
257-24-RT

APPENDIX I

Status of Route Segments

LAND STATUS ALONG THE ROUTE OF THE PROPOSED SEWERS

Mt. Vernon Street Sewer

Section	Status of Land
Entire length from Monticello Ave. to Kosciuszko Circle	City of Boston street -- BHA was contacted (10-8-75) regarding Columbia Pt. Housing Project and its sanitary discharges to the sewer. No future changes are proposed that may affect sanitary flows

Main Interceptor Replacement

Junction with E. Side to Penn Central R.R. Yards	Boston Taunton Transportation Co. (Jct. structure) New Boston Food Mkt. Quincy Market Cold Storage & Warehouse Co. N.Y., New Haven & Hartford RR tracks
Penn Central R.R. beneath MBTA R.R. Bridge to Milhender Place	N.Y., New Haven & Hartford RR tracks Penn Central R.R. tracks MBTA R.R. Bridge overpass MBTA R.R. Land
Milhender Place to Dorchester Ave.	Private Way
Dorchester Ave. Crossing under MBTA Tunnel with siphon	City of Boston street MBTA tunnel crossing
Old Colony Avenue	City of Boston street
Traffic Circle and across Columbia Raod	City of Boston street
Columbus Park	City of Boston park -- Boston Parks and Recreation Dept. (10-9-75) and Engineering Department were contacted

East Side Interceptor Replacement
South Branch

Section	Status of Land
Mass. Avenue to John Fitzgerald Expressway	Depending upon the final location of the sewer, the land could be: 1. part of the Roxbury Canal Conduit easement (City of Boston) 2. state highway easement for exit ramp from expressway 3. City of Boston land
Expressway crossing and Frontage Road Crossing	Mass. state highway Frontage Road (state road)
Frontage Road to Junction with Main Interceptor	Boston Taunton Transportation Company

East Side Interceptor Replacement
North Branch

Atlantic Avenue Section	City of Boston street
Atlantic Avenue to Fort Point Channel	Easement through a private way between buildings
Fort Point Channel - General Considerations for entire channel section from near Northern Avenue Bridge to W. Fourth Street	Division of Waterways license is required An Act of Legislature may be required Application for a license to build within Fort Point channel, under the provisions of Chapter 91 of the General Laws Information on all licensed crossings such as cables, water, steam, gas, electric, etc., must be obtained Location of the interceptor in relation to all present licensed crossings must be reviewed and approved by the governing agencies All bridge crossings must be reviewed and approved by the governing agencies

East Side Interceptor Replacement
North Branch (continued)

Section	Status of Land
Fort Point Channel - General Considerations (continued)	The following agencies have been or will be contacted: Army Corps of Engineers U.S. Coast Guard Mass Port Authority Metropolitan Area Planning Council City of Boston Conservation Committee U.S. Department of the Interior - Fish and Wildlife Service
Fort Point Channel - section from Northern Avenue Bridge to Congress Street Bridge	Easement through private land for Oliver Street connection Northern Avenue Bridge crossing Congress Street Bridge crossing
Fort Point Channel - section from Congress Street Bridge to Summer Street Bridge	Summer Street Bridge crossing Summer Street connection in City of Boston street
Fort Point Channel - section from Summer Street Bridge to Dorchester Avenue Bridge	Contacted Post Office Department regarding location of the interceptor behind the South Postal Annex Building MBTA Tunnel Crossing near Summer Street Dorchester Avenue Bridge crossing
Fort Point Channel - secrion from Dorchester Avenue Bridge to Broadway Bridge	Easement through Boston and Albany R.R. Yards for Dorchester Avenue connection New England R.R. Bridge crossing Broadway Bridge Crossing
Fort Point Channel - section from Broadway Bridge to W. Fourth Street Bridge	Along bank of channel W. Fourth Street Bridge crossing
W. Fourth Street Bridge to Junction with Main Interceptor	City of Boston land for P.W.D. facilities Building Boston Taunton Transportation Company

APPENDIX J

Approval of CDM 1967 Report

(Massachusetts DWPC)

The Commonwealth of Massachusetts
Water Resources Commission
State Office Building, Government Center
100 Cambridge Street, Boston 02202

OFFICE OF THE DIRECTOR
DIVISION OF WATER
POLLUTION CONTROL

December 5, 1967

Commissioner John F. Flaherty
Public Works Department
5th Floor, City Hall Annex
Boston, Massachusetts 02108

RE: Boston HUD PROJECT P-Mass-3306 Report on Improvements to the Boston Main Drainage System

Dear Commissioner Flaherty:

The Division of Water Pollution Control in response to a request made in your behalf by Camp, Dresser & McKee, has reviewed the report on Improvements to the Boston Main Drainage System and has considered the information submitted. The report is in two volumes, the title of the first being:

BOSTON HUD PROJECT P-MASS-3306
REPORT ON IMPROVEMENTS TO THE
BOSTON MAIN DRAINAGE SYSTEM

The primary purpose of the report is to determine the adequacy and recommend improvements to principal intercepting sewers and storm water conduits in the Boston Main Drainage System which comprises an area of about 10,800 acres with a present population of 300,000 persons.

The report is divided into three major sections as follows:

1. Initial Construction: Included in this phase are proposed improvements to the Main Interceptor, the East Side Interceptor and the construction of a marginal conduit, pumping station and outfall sewer to eliminate overflows to the Carson Beach areas. The report recommends necessary repairs and improvements to the many tide water gates which do not operate properly and allow large amounts of sea water to enter the system.

2. Future Sewer Construction: Included in the program is the replacement and enlargement of other principal interceptors of the system which are recommended to be constructed as needed.

3. Proposed Plan for Handling Combined Sewer Overflow and Storm Water: It is proposed to install a deep rock storage tunnel system under the city to

collect, store, and transport all combined overflows through a deep rock tunnel to Deer Island where the flows will be screened, chlorinated, and pumped through a deep sea outfall some 45,000 feet generally in an east northeast direction into Massachusetts Bay where it will be discharged through about 11,600 feet of diffusor pipes at about 110 feet below sea level.

The system is planned so that it can be easily extended to serve adjacent communities.

The Division is of the opinion that the report has been prepared in accordance with modern sanitary engineering practice and hereby gives general approval to the report with the understanding that the Division will give further review of the projects at the time of final planning.

The Division recommends that the City proceed immediately with a program of repairs to the tide gates which are not operating properly so as to reduce the amount of salt water entering the system, thus allowing additional capacity for handling sanitary flows.

Very truly yours,

Thomas C. McMahon
Director

TCM/REG/cl

cc: Camp, Dresser, & McKee ✓
1 Center Plaza
Boston, Massachusetts

Mayor John Collins
City Hall
Boston, Massachusetts

Department of Public Health
Room 511, State House
Boston, Massachusetts

MDC Commission
20 Somerset Street
Boston, Massachusetts

MDC Sewerage Division
20 Somerset Street
Boston, Massachusetts

APPENDIX K

Copy of NPDES Discharge Permit to City of Boston

April 2, 1975

Federal: MA - 010192

State: M-121

(Application No. M-124)

S. Environmental Protection Agency
Region I
John F. Kennedy Federal Building
Boston, Massachusetts 02203

The Commonwealth Of Massachusetts
Water Resources Commission
Division of Water Pollution Control
Leverett Saltonstall Building
Boston, Massachusetts 02202

Date: APRIL 2, 1975

Notice of Determination to Issue a Joint Federal-State Permit

Gentlemen:

Re: City of Boston Application to Discharge to Boston Harbor and tri
Federal Permit Number MA0101192; State Permit Number M121

On December 28, 1974, the United States Environmental Protection Agency ("EPA") and the Massachusetts Division of Water Pollution control (the "Division") published notice of their proposed issuance of a joint permit to control the above discharge under the Federal Water Pollution Control Act, as amended (the "Federal Act") and Sections 43-45 of the Massachusetts Clean Waters Act (the "State Act") and invited public comments on this matter. A public hearing was held January 31, 1975.

Based upon comments received as a result of such public notice and the analyses of the staffs of EPA and the Division, EPA and the Division decided to issue a joint permit to the applicant and have determined that the terms and conditions of the final permit represent the application of the best practicable control technology currently available and will assure that the receiving waters affected by the discharge will meet applicable water quality classification requirements. Accordingly, the permit was issued on April 2, 1975.

The permit requires the City of Boston to notify the Quincy Commissioner of Public Health when a discharge occurs from the Moon Island facility.

The implementation schedule for construction of the sewer and interceptors delayed for the start of final plans and specifications in order for the City to complete requirements and be eligible for Federal funding.

Pursuant to 40 CFR §125.35(d)(1), the permit will become effective 45 days after the date it was issued unless a request for an adjudicatory hearing is granted pursuant to 40 CFR §125.36(b). Any person, as defined in 40 CFR §125.36(a)(2), may submit a request for an adjudicatory hearing to the Regional Administrator within 10 days following the date of this letter. Such request will be granted only if it meets all of the conditions set forth in 40 CFR §125.36(b)(2). A copy of the pertinent portions of 40 CFR §125.36 is enclosed. A similar request should also be filed with the Division within 30 days of receipt of this determination in accordance with the provisions of the Massachusetts Administrative Procedure Act and the Division's Rules for the Conduct of Adjudicatory Proceedings.

Jeffrey G. Miller
Director
Enforcement Division
U.S. Environmental Protection Agency
Region I

Thomas C. McMahon
Thomas C. McMahon
Director
Massachusetts Division of
Water Pollution Control

Enclosure

S. Environmental Protection Agency
Region I
John F. Kennedy Federal Building
Boston, Massachusetts 02203

The Commonwealth Of Massachuset
Water Resources Commission
Division of Water Pollution Control
Leverett Saltonstall Building
Boston, Massachusetts 02202

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

RE: Application No.
Federal MA0101192
State M-124

City of Boston
Public Works Department
1 City Hall Square
Boston, Mass. 02201

April 2, 1975

Gentlemen:

Enclosed is your final National Pollution Discharge Elimination System Permit for the above referenced application, issued pursuant to Section 402 of the Federal Water Pollution Control Act, as amended, (the "Federal Act"), and Sections 43 - 45 of the Massachusetts Clean Waters Act, as amended, (the "State Act"). Also enclosed is a copy of guidelines specifying test methods published pursuant to Section 304(g) of the Federal Act. As noted in the permit, the permittee is required to utilize these test methods in monitoring its effluent.

The Regional Administrator of the Environmental Protection Agency and the Director of the Division of Water Pollution Control have determined that the permit as issued is substantially unchanged from the tentative determinations and draft permit prepared pursuant to federal and state laws and regulations. Within ten (10) days of the date of receipt of this determination you, or any interested parties, may request an adjudicatory hearing of the Regional Administrator in accordance with the provisions of 40 C.F.R. §125.36(b) and (c). A similar request should also be filed with the Director within thirty (30) days of the date of receipt of this determination in accordance with the provisions of the Massachusetts Administrative Procedure Act and the Division's Rules for the Conduct of Adjudicatory Proceedings.

Finally, please note that this permit does not relieve the permittee from the responsibility of compliance with Section 311 of the Federal Act and Section 27(14) of the State Act. These sections prohibit the discharge of harmful quantities of oil into the waters of the United States and require the person in charge of a facility from which an oil spill into such waters emanates, to

to notify immediately the appropriate federal and state agency. For oil spills into coastal waters, the appropriate federal agency is the nearest Coast Guard station. For oil spills into inland waters, the Environmental Protection Agency (617-223-7265) is the appropriate federal agency. In the event of oil spills into either inland or coastal waters the Division of Water Pollution Control (617-727-3855) should be notified. Oil spills are punishable under the various provisions of both the Federal Act and the State Act, and include both civil and criminal penalties.

The final format of the self-monitoring report, EPA Form 3320-1 (10-72), required by the NPDES permit has not been received by the Regional Administrator. Upon receipt of this form, you will be automatically placed on distribution.

Until the standard reporting form is available, the Regional Administrator and the Director will accept a letter report containing the information required by the NPDES permit. It would be most helpful if the data were presented in a tabular form showing both the permit criteria and the reported values for direct comparison by our staffs.

If you have any questions about the procedures described above, please contact Mr. Han Bonne of the Division at telephone number (617) 727-3855 or Mr. John Lynch of EPA at (617) 223-5061.

Jeffrey G. Miller
Director
Enforcement Division
Environmental Protection Agency

Thomas C. McMahon
Director
Massachusetts Division of
Water Pollution Control

U. S. Environmental Protection Agency
Region I
John F. Kennedy Federal Building
Boston, Massachusetts 02203

The Commonwealth Of Massachuse
Water Resources Commission
Division of Water Pollution Control
Leverett Saltonstall Building
Boston, Massachusetts 02202

DISCHARGE PERMIT

Name and Address of Applicant: City of Boston Public Works Department
1 City Hall Square, Boston, MA 02201

Application No. - Federal MA0101192
- State M-124

Date of Application November 14, 1973

Permit No. - Federal MA0101192
- State M-121

Date of Issuance

Date of Expiration June 30, 1977

Effective date - May 1, 1975
45 days

AUTHORITY FOR ISSUANCE

Pursuant to Section 402(a)(1) of the Federal Water Pollution Control Act, as amended (Public Law 92-500) and pursuant to authority granted by Chapter 21, Sections 26-53 of the Massachusetts General Laws, as amended, the following permit is hereby issued to:

City of Boston

(hereinafter called the "permittee"),

authorizing discharges from Discharge Serial Nos. 001-125 (see Attachment A)

to Boston Harbor and tributaries

such authorization being expressly conditional on compliance by the permittee with all terms and conditions of the permit hereinafter set forth.

This Discharge Permit is issued jointly by the U.S. Environmental Protection Agency and the Division of Water Pollution Control under Federal and State law, respectively. Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension, or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension, or revocation. In the event any portion of this Permit is declared invalid, illegal or otherwise issued in violation of State law, such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this Permit is declared invalid, illegal or otherwise issued in violation of Federal law, this Permit shall remain in full force and effect under State law as a Permit issued by the Commonwealth of Massachusetts.

I. SPECIAL CONDITIONS

A. Effluent Limits

1. Until June 30, 1977, the permittee is authorized to discharge untreated stormwater/sanitary sewage overflow and bypass from outlets 001 through 125 (described in Attachment A) subject to Special Condition D.

2. No new wastewater flows will be allowed to connect into the permittee's sewerage system unless prior written approval has been obtained from the Massachusetts Division of Water Pollution Control and the Metropolitan District Commission.

3. The Moon Island Facility (discharge 125) when it is being operated, shall hold the untreated sewage until 15 minutes after high tide at which time the sewage can be discharged for a period not to exceed three hours. The discharge shall be chlorinated when it occurs during the months of May through September inclusive The chlorination facilities shall be installed prior to May 1975. They shall be installed and operated such that the chlorine contact time is at a maximum. Durin each discharge to Boston Harbor, the effluent shall be monitored as follows:

Flow	Total gallons
BOD	Composite during period
TSS	Composite during period
Total Coliform	Grab
Fecal Coliform	Grab
Chlorine Residual	2 X Grab
Times of Discharge	-

4. The City of Boston shall check all tide gates at least twice a year to see that they are working properly, and repair them, if necessary. A summary of the tide gates shall be made to the Regional Administrator and Director by the 15th of each July and January for the previous six months indicating number of gates checked, number inoperative, number in good working condition, number repaired and numbers to be repaired. On the later item, reasons for non-repair shall be given.

5. The permittee shall notify the Quincy Commissioner of Public Health by phone when a discharge occurs from the Moon Island Facility.

B. Implementation Schedule

Completion of each of the following steps shall be performed in sufficient scope and detail so as to allow the permittee to meet prerequisites to timely commencement of the next step to be taken, including all applicable requirements of federal, state, and local law and all applicable requirements for the receipt of grant assistance.

1. By July 1, 1975, have in effect a sewer use ordinance, and/or rules and regulations, pursuant to Section 10 of Chapter 83, Massachusetts General Laws (see General Condition 20).

2. By July 1, 1976, report on bypasses and/or overflows (see General Condition 19 and Special Condition D).

3. Other

   a. Progress reports on General Condition 19 and Special Condition D by August 1, 1975.

4. Commence preparation of final plans and specifications for the following:

   a. By January 1, 1976, for the Mount Vernon Street Sewer
   b. By June 30, 1976, for the Eastside Interceptor
   c. By June 30, 1976, for the Main Interceptor

5. Submit to the Regional Administrator for review and the Director for approval, plans and specifications for the above, as follows:

   a. January 1, 1977

6. Submit progress reports on 4 above, as follows:

   a. July 1, 1976
   b. January 1, 1976 and October 1, 1976
   c. January 1, 1976 and October 1, 1976

before we start?

C. Reporting and Non-Compliance

Where a specific action is required in B above to be taken by a certain date, the permittee shall submit to the Regional Administrator and the Director a written notice of compliance or non-compliance with each of the above scheduled dates, postmarked no later than 14 days following each elapsed date. Each notice of non-compliance shall include the following information:

1. A short description of the non-compliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

3. A description of any factors which tend to explain or mitigate the non-compliance; and

4. An estimate of the date permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next schedule requirement on time.

Compliance shall be reported by:

1. Submittting the required documents on schedule; or

2. By indicating in writing that the required action has been taken.

D. Bypasses and Overflows

1. General Requirements

stormwater (in Draft Permit)

The permittee, in coordination with the Metropolitan District Commission, shall operate the sewer system to minimize the discharge of pollutants from combined sewer overflows and bypasses.

No new sources of inflow shall be connected into any separate sewers in the sewer system.

2. The permittee shall report to the permit issuing authorities within 6 months of the effective date of this permit, the following:

   a) The maximum hydraulic flow rate the permittee may deliver to the Metropolitan District Commission sewer system consistent with the Metropolitan District Commission's maximum treatable flow rate, or,

   b) A detailed operational plan, which when implemented jointly by the permittee and the Metropolitan District Commission, would provide a lower discharge of pollutants from the overall system during wet weather than if the permittee discharges for treatment the maximum flow rate in a) above.

3. Operational Plan

An operational plan designed to minimize the discharge of pollutants from combined sewer overflows and bypasses must be approved by the permit issuing authorities and be implemented by the permittee within 1 1/2 years of the effective date of this permit. The plans shall be submitted to the issuing authorities for approval at least four months before it is to be implemented. The plan shall provide for optimum coordinated operation of sewage treatment plants and tributary sewer systems.

The plan shall specifically:

a. Define the estimate of maximum treatable flow rate that may be delivered to the treatment facilities.

b. Report, if applicable, the number, location, types and kinds of regulators and their respective operating history, maintenance program and performance efficiency.

c. Report the calculated or estimated storage capacities of the sewer system upstream from all control devices, such as pump stations and regulators, or combined sewer discharges.

d. Provide operational procedures for utilizing at least 80 percent of the available capacity of interceptors and trunk lines upstream of any control devices such as pump stations, or regulators prior to any discharge from a combined sewer overflow or bypass; or provide, if such storage capacity utilization cannot be achieved with existing control devices, the operational procedures for maximizing the use of storage prior to any combined sewer discharge.

e. Provide a method to determine if the upstream storage capacity was utilized prior to any discharge from the combined sewer system.

E. Sewer Separation

A preliminary engineering report shall be submitted to the Regional Administrator and Director by December 1, 1975 on the separation of sanitary and industrial connections from storm sewers. The report shall describe the location and nature of the connection with a schedule for separation giving highest priority to storm sewers that discharge to Class B waters.

Following approval of the engineering report, the City of Boston will follow a design and construction schedule for separation as modified by the Regional Administrator and Director.

Progress reports shall be submitted by the first of each July and January commencing on July, 1975 until the construction program is completed.

II. General Conditions

1. a. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit. Such a violation may result in the imposition of civil and/or criminal penalties as provided for in Section 309 of the Federal Act or Section 42 of the State Act. Facility modifications, additions, and/or expansions that increase the plant capacity must be reported to the Regional Administrator and the Director, and this permit then modified or reissued to reflect such changes. No change in the facility discharge, including any new significant industrial discharge or any significant change in the quality or quantity of an existing industrial discharge to the treatment system, that will result in new or increased discharges of pollutants from such treatment system may be made unless reported to the Regional Administration and approved by Director. This permit may be modified accordingly. In no case are new connections, increased flows, or significant changes in influent quantity or quality permitted that will cause violation of the effluent limitations specified herein.

2. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

   a. Violation of any terms or conditions of the permit;

   b. Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts; and

   c. A change in conditions or the existence of a condtion which requires either a temporary or permanent reduction or elimination of the authorized discharge.

3. The permittee shall permit the Regional Administrator, Director, and other duly authorized Environmental Protection Agency and Division personnel upon the presentation of proper credentials:

   a. To enter upon permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

   b. To have access to and copy any records required to be kept under the terms and conditions of this permit;

   c. To inspect any monitoring equipment or monitoring method required in this permit; or

   d. To sample at any intake, wastewater treatment facility, and/or outfall.

4. In the event of any change in control or ownership of facilities from which the authorized discharges originate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the Director. Succeeding owners or controllers shall be bound by all the conditions of this permit, unless and until a new or modified permit is obtained.

5. All waste collection, control, treatment, and disposal facilities shall be operated in a manner consistent with the Division's "Rules and Regulations for Operation and Maintenance of Sewerage Systems and Waste Treatment Facilities," as most recently amended, and any applicable Federal Regulations and Guidelines, which regulations are hereby incorporated into and made a part of this permit. The permittee shall at all times maintain in good working order and operate as efficiently as possible any facilities or system of control installed or utilized to achieve compliance with the terms and conditions of this permit.

6. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges; nor does it authorize or relieve the permittee of any liability for any

injury to private property or any invasion of personal rights; nor any infringement of Federal, State, or local laws or regulations; nor does it waive the necessity of obtaining any local assent required by law for the discharge authorized herein.

7. This permit shall be subject to such monitoring requirements as may be reasonably required by the Regional Administrator and Director, including the installation, use, and maintenance of monitoring equipment or methods (including, where appropriate, biological monitoring methods). The permittee shall provide the Regional Administrator and the Director with periodic reports on the proper reporting form of monitoring results obtained by a permittee pursuant to the monitoring requirements contained herein. The permittee shall maintain records of all information resulting from any monitoring activities required herein. Any records of monitoring activities and results shall include for all samples:

   a. The date, exact place and time of sampling;

   b. The dates and times analyses were performed;

   c. Who performed the sampling and analyses;

   d. The analytical techniques/methods used, including sampling, handling, and preservation techniques; and

   e. The results of each such analysis. Any records of monitoring activities and results including all original strip chart recordings for continuous monitoring instrumentation and calibration and maintenance records, shall be retained for a minimum of three years. This period shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Regional Administrator or the Director.

8. All information and data provided by an applicant or a permittee identifying the nature and frequency of a discharge shall be available to the public without restriction. All other information (other than effluent data) which may be submitted by an applicant in connection with a permit application or which may be furnished by a permittee in connection with required periodic reports shall also be available to the public unless the applicant or permittee is able to demonstrate that the disclosure of such information or particular part thereof to the general public would divulge methods or processes entitled to protection as trade secrets in accordance with Federal regulations contained in 40 CFR Part 124.35. Where the applicant or permittee is able to so demonstrate, the Director and the Regional Administrator shall treat the information or the particular part (other than effluent data) as confidential and not release it to any unauthorized person. Such information may be divulged to other officers, employees, or authorized representatives of the Commonwealth or the United States Government concerned with carrying out water pollution control laws.

9. All reports and communications required hereunder are to be made or sent to the Director of the Division of Water Pollution Control and the Regional Administrator of the Environmental Protection Agency.

10. Notwithstanding 2 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition, and the permittee shall be so notified.

11. The provisions of this permit are severable, and the invalidity of any condition or subdivision thereof shall not make void any other condition or subdivision thereof.

12. Reporting and Monitoring

   a. Quality Control

The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at regular intervals to ensure accuracy of measurements or shall ensure that both activities will be conducted. Samples shall be representative of the volume and quality of effluent discharged over the sampling and reporting period.

   (1) The permittee shall provide the above records and shall demonstrate the accuracy of the flow measuring device upon request of the Director and the Regional Administrator. The permittee shall identify the effluent sampling point used for each discharge.

   (2) The permittee shall analyze any additonal samples as may be required by the Director and the Regional Administrator to ensure analytical quality control.

   (3) If this permittee monitors any pollutant more frequently than is required by this permit, he shall also provide the results of such monitoring to the Director and Regional Administrator.

   b. Sampling and Analysis

The sampling, preservation, handling, and analytical methods used must conform to the test procedures guidelines prepared under Section 304(g) of the Federal Act.

c. Reporting

The results of the above mentioned requirements shall be reported as required in Special Condition C. The permittee shall include in this report any previously approved non-standard methods used. Permanent elimination of a discharge should be brought to the attention of the Director and the Regional Administrator within 15 days by a special written notification. A written report should be submitted if there have been any modifications in the waste collection, treatment, and disposal facilities; changes in operational procedures; or other significant activities which alter the nature and frequency of the discharge or otherwise concern the conditions of this permit.

13. Certification of Reports

All reports shall be signed by the chief operator of the treatment facility and

a. In the case of corporations, by a principal executive officer of at least the level of vice president, or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the NPDES form originates;

b. In the case of a partnership, by a general partner;

c. In the case of a sole proprietorship, by the proprietor;

d. In the case of a municipal, State, or other public facility, by either a principal executive officer or ranking elected official.

14. Oil Discharges

There shall be no discharge of harmful quantities of oil, as defined pursuant to 40 CFR 110 and Massachusetts Water Quality Standards, including (1) any subsequent amendments or revisions made thereto, or (2) any more restrictive limitations which may be imposed otherwise by law or regulation. The authorization of this permit does not preclude the institution of any legal action nor relieve the permittee from any liabilities, penalties, or responsibilities established by Section 311 of the Federal Act, by Massachusetts General Laws c. 21, §27(14), and 42 as amended, and the Massachusetts Rules for the Prevention and Control of Oil Pollution in the Waters of the Commonwealth by any subsequent amendments thereto, or by any superseding Federal or State legislation.

15. Other Materials

Other materials ordinarily produced or used in the operation of this facility, which have been specifically identified in the application, may be discharged at the maximum frequency and maximum level identified in the application, provided:

a. They are not

(1) Designated as toxic or hazardous under provisions of Sections 307 and 311, respectively, of the Federal Water Pollution Control Act, or the Massachusetts General Laws c. 21, §§57, 58 and the Division of Water Pollution Control Hazardous Waste Regulations

(2) Known to be hazardous or toxic by the permittee, except that such materials may be discharged in certain limited amounts with the written approval of, and under special conditions established by the Director and the Regional Administrator or their designated representatives, if the substance will not pose any imminent hazard to the public health or safety;

b. The discharge of such materials will not violate applicable water quality standards; and

c. The permittee is not notified by the Director and the Regional Administrator to eliminate or reduce the quantity of such materials entering the watercourse.

16. Solids Disposal

Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in such a manner as to prevent entry of such materials or leachate therefrom into navigable waters or their tributaries.

17. Non-Compliance

In the event the permittee is unable to comply with any of the conditions of this permit, due, among others reasons, to:

a. breakdown or maintenance of waste treatment equipment (biological and physical-chemical systems including, but not limited to, all pipes, transfer pumps, compressors, collection ponds or tanks from the segregation of treated or untreated wastes, ion exchange columns, or carbon absorption units),

b. accidents caused by human error or negligence, or

c. other causes, such as act of nature,

the permittee shall provide the Regional Administrator and the Director with the following information in writing within five days after commencement of such occurrence:

(1) cause of non-compliance;

(2) a description of the non-complying discharge including its impact upon the receiving waters;

(3) anticipated time the condition of non-compliance is expected to continue, or if such condition has been corrected, the duration of the period of non-compliance;

(4) steps taken by the permittee to reduce and eliminate the non-complying discharge; and

(5) steps to be taken by the permittee to prevent reoccurrence of the condition of non-compliance.

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from non-compliance with any effluent limitation specified in this permit, including, such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for non-compliance, whether or not such non-compliance is due to factors beyond his control, such as equipment breakdown, electric power failure, accident, or natural disaster.

18. Emergency Action - Electric Power Failure

The permittee shall indicate in writing to the Regional Administrator and the Director within 30 days of the effective date of this permit that, in the event the primary source of electric power fails, the permittee will provide, as a minimum, primary treatment (or its equivalent) plus disinfection for all wastes discharged into the waste treatment facility. If the permittee does not so indicate to the Regional Administrator and the Director, it shall provide an alternative source of power for the operation of its treatment facilities in accordance with a schedule to be established by the Regional Administrator and the Director which will become part of this permit. The alternate power supply, whether from a generating unit located at the plant site or purchased from an independent source of electricity, must be separate from the existing power source used to operate the waste treatment facilities. If a separate facility located at the plant site is to be used, the permittee shall certify in writing to the Regional Administrator and the Director when the facility is completed and prepared to generate power.

19. Bypasses

a. The diversion or bypass of any discharge from waste treatment facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit is prohibited, except

(1) where unavoidable to prevent loss of life or severe property damage, or

(2) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit.

The permittee shall immediately notify the Regional Administrator and the Director in writing of each such diversion or bypass in accordance with the procedure specified above for reporting non-compliance.

b. Pollutant discharges resulting from bypass flows and overflows of the permittee's severage system are subject to this permit. Such discharges (such as those attributable to combined sewers) could cause serious problems in the receiving waters. Prior to setting specific effluent limitations on such discharges, additional information is required. The permittee shall submit such information to the Regional Administrator and the Director as specified in Special Condition B. The submittal shall identify and locate such discharges and shall, as a minimum, describe the extent and causes of such discharges, estimate the frequency and duration of such discharges, describe the effect on the receiving waters, and contain such additional data as is available to the applicant. The permittee shall also submit its preliminary long-range plan of abatement for these discharges. This permit condition shall not abrogate responsibility of the permittee to supply additional information requested in any federal permit application form.

The Regional Administrator and the Director reserve the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Federal and State Acts in order to bring all such discharges into compliance with these Acts.

20. Sewer Ordinances

The permittee shall have in effect (as specified in Special Condition E), a sewer use ordinance and/or Rules and Regulations, pursuant to Section 10 of Chapter 83 of the Massachusetts General Laws, acceptable to the Regional Administrator and the Director which, as a minimum:

a. Prohibits the introduction by any discharger into the permittee's sewerage system or treatment facilities of any pollutant which

(1) is a toxic pollutant in toxic amounts, as defined in standards issued from time to time under Section 307(a) of the Federal Act or any applicable State Act;

(2) creates a fire or explosion hazard in permittee's treatment works;

(3) causes corrosive structural damage to permittee's treatment works, including all wastes with pH lower than 5.0;

(4) contains solid or viscous substance in amounts which would cause obstruction to the flow in sewers or other interference with proper operation of the permittee's treatment works; or

(5) in the case of a major contributing industry, as defined herein, contains an incompatible pollutant, as further defined herein, in an amount or concentration in excess of that allowed under standards or guidelines issued from time to time pursuant to Sections 304, 306 and/or 307 of the Federal Act, or pursuant to any applicable State Act; or

(6) has not been subjected to any pretreatment that may be required under Federal or State law.

b. Requires 45 days prior notification to the permittee by any person or persons of a

(1) proposed substantial change in volume or character of pollutant over that being discharged into the permittee's treatment works at the time of issuance of this permit,

(2) proposed new discharges into the permittee's treatment works of pollutants from any source which would be a new source as defined in Section 306 of the Federal Act, if such source were discharging pollutants, or

(3) proposed new discharge into the permittee's treatment works of pollutants from any source which would be subject to Section 301 of the Federal Act if it were discharging such pollutants.

c. Requires any industry discharging into the permittee's treatment works to perform such monitoring of its discharges as the permittee may reasonably require, including the installation, use, and maintenance of monitoring equipment methods, to keep records of the results of such monitoring, and to report the results of such monitoring to the permittee. Such records shall be made available by the permittee to the Regional Administrator and the Director upon request.

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d. Authorizes the permittee's authorized representative to enter into, upon, or through the premises of any industry discharging into the permittee's treatment works to have access to and copy any records, to inspect any monitoring equipment or method required under subsection (c) above, and to sample any discharge into the permittee's treatment works.

21. Changes in Discharges to Treatment Facilities

The permittee shall notify the Regional Administrator and the Director of any discharge specified in General Condition 20(b) hereof within 30 days of the date on which it comes to the attention of the permittee. This permit may be modified accordingly.

22. Reapplication

If the permittee desires to continue to discharge after the expiration of this permit, it shall reapply on the application forms then in use at least 180 days before this permit expires.

23. Definitions

For purposes of this permit, the following definitions shall apply:

Regional Administrator -	Regional Administrator, Region I, Environmental Protection Agency, John F. Kennedy Federal Building, Government Center, Boston, Massachusetts 02203 Attention: Permits Branch
Director -	Director of the Massachusetts Division of Water Pollution Control
Division -	Massachusetts Water Resources Commission, Division of Water Pollution Control, Leverett Saltonstall Building, 100 Cambridge Street, Boston, Massachusetts 02202
Mean -	The mean value is the arithmetic mean unless used for fecal or total coliform, which would be a geometric mean.
National Pollutant Discharge Elimination System Permit (NPDES) -	A permit issued under authority of 402 of the Federal Water Pollution Control Act, as amended (Public Law 92-500).
Grab Sample -	An individual sample collected in a period of less than 15 minutes.

Composite Sample - A sample consisting at a minimum of grab samples taken hourly during the period specified in the section on Monitoring and Reporting and combined proportional to flow, or a sample continuously collected proportional to flow over that same time period.

Weekly Average - The average of a minimum of three composite samples taken on three separate days, or at least one grab sample per day, taken on three separate days, as required for the parameter being reported within a week.

Monthly Average - The average of a minimum of twelve composite samples taken on twelve separate days, or at least one grab sample per day, taken on twelve separate days, as required for the parameter being reported within a calendar month.

Maximum Day - A value not to be exceeded by any composite or grab sample, as appropriate.

Instantaneous Maximum - A value not to be exceeded in any grab sample.

Average - The arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms, the average shall be computed as the geometric mean.

Incompatible Pollutant - Any pollutant, other than biochemical oxygen demand, suspended solids, pH, fecal coliform bacteria, or additional pollutants identified in the permit, which the treatment works was not designed to treat and does not remove to a substantial degree.

Major Contributing Industry - One that:

1. Has a flow of 50,000 gallons or more per average work day;
2. Has a flow greater than five percent of the flow carried by the municipal system receiving the waste;
3. Has in its wastes a toxic pollutant in toxic amounts as defined in standards issued under Section 307(a) of the Act; or
4. Has a significant impact, either singly or in combination with other contributing industries, on a publicly owned treatment works or on the quality of effluent from that treatment works.

The following abbreviations, when used, are defined below:

Cu. M/day or M^3/day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
kgpd or kg/day	kilograms per day
Temp. °C	temperature in degrees Centigrade
Temp. °F	temperature in degrees Fahrenheit
TNFR or TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
NH_3-N	ammonia nitrogen as nitrogen
lb/day	pounds per day
Total P	total phosphorus as phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	hexane extractable material
Total Coliform	total coliform bacteria
Turb.	turbidity measured in Jackson Candle Units (JTU)

Fecal Coliform	total fecal coliform bacteria
ml/1	milliliter(s) per liter
ml	milliliter(s)
SU	standard units
NO_3-N	nitrate nitrogen as nitrogen
NO_2-N	nitrite nitrogen as nitrogen
NO_2&NO_3	combined nitrite and nitrate nitrogen as nitrog
Cl_2	total residual chlorine

This permit shall become effective 45 days after the date of the signature of the signatories listed below and shall expire on June 30, 1977.

Thomas C. McMahon
Thomas C. McMahon, Director
Division of Water Pollution Control
Commonwealth of Massachusetts

4/1/75
Date

Jeffrey G. Miller, Director
Enforcement Division
Environmental Protection Agency

APR 2 1975
Date

ATTACHMENT A

DISCHARGE SERIAL NO.	LOCATION	TYPE OF OUTLET	POS NO.	COMPOSITION OF DISCHARGE	FREQUENCY	RECIEVING WATER
EAST	BOSTON					
001	BENNINGTON ST. NEAR TRIDENT ST.	STORM DRAIN	1	SANITARY/ STORMWATER	—	BOSTON HAR
002	MOORE ST	COMBINED SEWER OVERFLOW	3	"	—	BOSTON H.
003	SOUTH WEST SIDE OF AIRPORT AT [illegible] ST. EXTENDED	[illegible]	5	"	—	BOSTON HAR
004	MAVERICK ST. [illegible] 500' EAST OF JEFF	COMBINED SEWER [illegible] OVERFLOWS	6	"	—	BOSTON H
[illegible]	SUMNER ST EXTENDED	COMBINED SEWER OVERFLOW	7	"	—	BOSTON HAR
[illegible]	OFF MARGINAL ST. AT [illegible] ST	COMBINED SEWER OVERFLOW	9	"	—	BOSTON HAR
[illegible]	OFF MARGINAL ST AT COTTAGE ST EXTENDED	COMBINED SEWER OVERFLOW	10	"	—	BOSTON H
	LEWIS ST. EXTENDED	[illegible] STORM DRAIN	11	STORMWATER WITH [illegible] SANITARY [illegible]		BOSTON HAR
007	NEW ST EXTENDED	COMBINED SEWER OVERFLOW	12	SANITARY/ STORMWATER		BOSTON HAR
10	OFF BORDER ST 200' NORTH OF DECATUR ST	COMBINED SEWER OVERFLOW	13	"		BOSTON H
011	BORDER ST AT LEXINGTON ST EXTENDED	"	14	"	—	BOSTON HARBO
012	[illegible] ST AT [illegible] ST EXTENDED	"	16	"	—	BOSTON H
013	MERIDIAN ST AT THE CHELSEA [illegible]	"	17	"	—	CHELSEA RIVER
[illegible]	CHELSEA [illegible]	"	19	"		CHELSEA [illegible]
[illegible]	CHELSEA ST NEAR [illegible]	"	20	"		CHELSEA [illegible]

DISCHARGE SERIAL NO.	LOCATION	TYPE OF OUTLET	COS. REF NO.	COMPOSITION OF DISCHARGE	FREQUENCY	RECEIVING WATER
016	CLYDE ST	12 IN STORM DRAIN	217	STORMWATER WITH [illegible] SANITARY [illegible]	—	CHELSEA RIVER
C						
CHARLESTOWN						
017	[illegible] ST [illegible]	COMBINED SEWER OVERFLOW	23	SANITARY/ STORMWATER		MYSTIC RIV
018	[illegible] - KING [illegible] EXTENDED	"	25	"	—	LITTLE MYSTIC CHANNEL
019	[illegible] ST EXTENDED	"	26	"	—	LITTLE MYSTIC CHANNEL
020	CHELSEA ST AT VINE ST EXTENDED	"	27	"		BOSTON HA
021	WATER ST AT WAPPING ST EXTENDED	"	28	"	—	BOSTON HARBO
022	WATER ST AT GRAY ST EXTENDED	"	29	"	—	BOSTON HARBO
023	WARREN AVE BRIDGE	"	30	"		BOSTON HA
024	CHARLES RIVER AVE EXTENDED	"	32	"	—	BOSTON HAR
025	FIRST ST NEAR [illegible] ST [illegible]	" [illegible]	33	"	—	MILLERS RIVER
026	ACROSS [illegible] [illegible]	"	34	"	—	MILLERS RIVER
027	[illegible] ST [illegible]	"	35	"	—	MILLERS RIV
	ACROSS RAILROAD [illegible] [illegible] ST EXTENDED	"	01[illegible]	"	—	"

Discharge Serial	Location	Type of Outlet	Ros. Ref. No.	Composition of Discharge	Frequency	Receiving Water
029	Mystic River East of Malden Bridge	15 in Storm Drain	016	Stormwater with possible Sanitary connections		Mystic Rive
030	Mystic River West of Malden Bridge ([illegible])	30 in Storm Drain	[illegible]	//	—	Mystic Riv
[illegible]	Paxton St Extended	Combined Sewer Overflow	37	Sanitary/Stormwater		Charles Ri.
32	North Beacon St Extended at Birmingham Parkway	//	XII	//	—	Charles Rive
033	Arsenal St [illegible]	//	39	//	—	Charles Rive
034	South of Cambridge St Bridge	//	40	//	—	Charles Riv
035	North of [illegible] St Extended	//	41	//	—	Charles Ri
036	St Mary's St Extended	//	XI	//	—	Charles Riv
037	Telford St Extended	66 in Storm Drain	207	Stormwater with possible Sanitary connections		Charles Riv
038	North Harvard St Extended	36 in Storm Drain	208	//		Charles Ri
039	Amory St Extended	60 in Storm Drain	211	Untreated wastewater	—	Charles Ri
040	Pleasant St Extended	[illegible] in Storm Drain	214	Stormwater with possible Sanitary connections		Charles Riv
041	North of Western Ave Bridge (West Bank)	24 in Storm Drain	258	//		Charles Ri

DISCHARGE SERIAL NO.	LOCATION	TYPE OF OUTLET	POS REF NO.	COMPOSITION OF DISCHARGE	FREQUENCY	RECEIVING WATERS
[illegible]	ROXBURY					
042	DEERFIELD ST EXTENDED	COMBINED SEWER OVERFLOW	43	SANITARY/ STORMWATER	—	CHARLES RIVER
043	MUDDY RIVER NEAR HUNTINGTON AVE. [illegible]	45-IN STORM DRAIN	246	STORM WATER WITH POSSIBLE SANITARY CONNECTIONS		MUDDY R.
044	ASPINWALL AVE EXTENDED	18-IN STORM DRAIN	247	"		MUDDY R.
045	BLACKFAN ST EXTENDED	30-IN STORM DRAIN	250	"		MUDDY RIVER
BACK	BAY					
046	STATION #1 GATEHOUSE BACK BAY FENS FORSYTH WAY	COMBINED SEWER OVERFLOW	245	SANITARY/ STORMWATER	—	CHARLES RIVER
047	BACK BAY FENS AT WASHINGTON ST EXTENDED	24-IN STORM DRAIN	251	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		BACK BAY FENS
048	BACK BAY FENS AT KILMARNOCK ST EXTENDED	15-IN STORM DRAIN	252	"		BACK BAY FENS
BOSTON	NORTHWEST (CHARLES ST/LEVERETT CIRCLE/N. STATION)					
049	NORTHWEST OF NASHUA ST EXTENDED	COMBINED SEWER OVERFLOW	54	SANITARY/ STORMWATER	—	CHARLES RIVER
050	NEAR [illegible] ST AND WARREN BRIDGE	"	56	"		CHARLES RIVER

Discharge Serial No.	Location	Type of Outlet	Bos. Ref. No.	Composition of Discharge	Frequency	Receiving Water
051	Prince St Extended	Combined Sewer Overflow	58	Sanitary/Storm	—	Charles River
052	Charter St Extended	"	59	"	—	Boston Harbor
[illegible] Boston (Ch[illegible] Br/Atlantic Ave/[illegible] State)						
053	Hanover St Extended	Combined Sewer Overflow	60	Sanitary/Storm	—	Boston Harbor
054	Battery St Extended	"	61	"		"
055	Battery St Extended	Two Storm Drains	61A	Stormwater with poss. sanitary connections		"
056	Near Clark St Extended	Combined Sewer Overflow	62	Sanitary/Storm	—	"
057	[illegible] Ave Extended	Storm Drain	63	Stormwater with possible sanitary connections		"
058	Clinton St Extended	Combined Sewer Overflow	64	Sanitary/Storm		"
059	Near State St Extended	Storm Drain	65	Stormwater with possible sanitary connections?		"
060	Near Central St Extended	Combine Sewer Overflow	66	Sanitary/Storm		"
061	Belcher Lane Extended	"	67	"		"
062	Oliver St Extended	"	218	"		Fort Point Channel
063	Fort Point Channel at Congress St	"	68	"		Fort Point Channel

Discharge Serial No.	Location	Type of Outlet	Bos. Ref. No.	Composition of Discharge	Frequency	Recieving Water
064	Fort Point Channel at Summer St	Combined Sewer Overflow	69	Sanitary/ Stormwater		Fort Point Channel
065	Kirkland St Extended	"	70	"		"
066	North of Congress St Bridge (West End)	24-in Storm Drain	259	Stormwater with Possible Sanitary (Connections)		"
[illegible] Southwest	and South	(Albany St /	[illegible]	14th St	[illegible]	[illegible]
067	Fort Point Channel at Castle Street [illegible]	8-in Stormwater Pumping Station Force Main	71	Stormwater with Possible Sanitary Connections		Fort Point Channel
068	Near Troy St Extended	Combined Sewer Overflow	72	Sanitary/ Stormwater		Fort Point Channel
069	Dover St Extended	"	73	"		"
070	Roxbury Canal Conduit Outlet at Dover St [illegible]	"	219	"		"
South Boston						
071	West Fourth St [illegible]	Combined Sewer Overflow	84	Sanitary/ Stormwater		Fort Point Channel
072	Fort Point Channel [illegible]	"	85	"		"
073	Fort Point Channel at [illegible]	"	86	"		"

DISCHARGE SERIAL NO.	LOCATION	TYPE OF OUTLET	CSO REF NO.	COMPOSITION OF DISCHARGE	FREQUENCY	RECEIVING WATERS
074	SUMMER ST BRIDGE (SOUTHEAST END)	STORM DRAIN OUTLET	86A	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		FORT POINT CHANNEL
075	CONGRESS ST BRIDGE [illegible]	"	87	"		"
076	WEST FIRST ST. AT F ST EXTENDED	COMBINED SEWER OVERFLOW	220	SANITARY/ STORMWATER		RESERVED CHANNEL
077	CLAFLIN ST EXTENDED	24" IN SURFACE DRAIN AT E ST.	89	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		RESERVED CHANNEL
078	RESERVED CHANNEL AT I STREET EXTENDED	COMBINED SEWER OVERFLOW	90	SANITARY/ STORMWATER		"
079	SUMMER ST (FROM EAST FIRST STREET)	"	91	"		"
080	EAST FIRST ST AT FARRAGUT RD EXTENDED	"	92	"		"
081	FARRAGUT RD AT SIXTH ST	"	93	"		OLD HARBOR
082	N STREET EXTENDED NEAR MARINE RD	"	94	"		"
083	K STREET EXTENDED	"	95	"		"
084	H STREET EXTENDED	"	96	"		"
085	REV R.A. BURKE ST. EXTENDED	"	97	"		"
086	KEMP ST EXTENDED	"	98	"		"
087	MT VERNON ST AND MORRISSEY BLVD.	"	99	"		"

DISCHARGE SERIAL #	LOCATION	TYPE OF OUTLET	BOS OFF #	COMPOSITION OF DISCHARGE	FIELD	RECIEVING WATER
DORCHESTER						
068	FREEPORT WAY EXTENDED	COMBINED SEWER OVERFLOW	100	SANITARY/ STORMWATER		DORCHESTER BAY
069	SOUTH OF SAVIN HILL TO FOX POINT	"	101	"		"
070	TENEAN BAY NEAR VICTORY ROAD	"	103	"		NEPONSET RIV
071	ERICSSON ST EXTENDED	"	104	"		"
072	TENEAN ST WEST OF CONLEY ST	72 IN STORM DRAIN	105	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		NEPONSET RIVER (FINE MESH C
073	NEPONSET RIVER [illegible]	COMBINED SEWER OVERFLOW	106	SANITARY/ STORMWATER		NEPONSET RIV
074	HALLET ST AT DAVENPORT BROOK	"	107	"		"
075	HILLTOP AND LENOXDALE ST	36 IN STORM DRAIN	108	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		NEPONSET RIV
076	NEPONSET RIVER AT GRANITE AVE.	COMBINED SEWER OVERFLOW	109	SANITARY/ STORMWATER		NEPONSET R
077	OFF SAVIN HILL AVE (NORTH)	24 IN STORM DRAIN	[illegible]	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		DORCHESTER
078	MALIBU BEACH COVE AT DENNY ST EXTENDED	30 IN. STORM DRAIN	202	UNTREATED WASTEWATER		DORCHESTER B
079	MALIBU BEACH COVE AT DORCHESTER YACHT CLUB	36 IN STORM DRAIN	203	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		DORCHESTER
100	[illegible] EXTENDED	COMBINED SEWER OVERFLOW	204	COMBINED SEWER OVERFLOW		NEPONSET RIVER
101	BEARSE AVE. EXTENDED	15 IN STORM DRAIN	205	STORMWATER WITH POSSIBLE SANITARY C		NEPONSET R
102	[illegible]	[illegible]	206	"		NEPONSET
	[illegible]	[illegible]	[illegible]	"		

[illegible]	LOCATION	TYPE OF OUTLET	BOS REF NO.	COMPOSITION OF DISCHARGE	[illegible]	RECEIVING WATER
104	BLUE HILL AVE AT [illegible]	72 IN STORM DRAIN	228	STORMWATER WITH POSSIBLE SANITARY CONNECTIONS		NEPONSET RIVER
105	SOUTH OF RIVER ST AT [illegible] DRIVE	102 IN x 72 IN STORM DRAIN	229	"		NEPONSET RIVER
106	OSCEOLA ST	21 IN STORM DRAIN	230	"		NEPONSET RIVER
107	[illegible]	24 IN STORM DRAIN	231	"		NEPONSET RIVER
108	WEST OF WOOD AVE EXTENDED	67 IN STORM DRAIN	232	"		NEPONSET RIVER
109	[illegible] ST EXTENDED	40 IN STORM DRAIN	233	"		"
110	WEST ST EXTENDED	30 IN STORM DRAIN	234	"		"
111	ERIE ST EXTENDED	24 IN STORM DRAIN	235	"		"
112	WALTER ST. EXTENDED	30 IN STORM DRAIN	236	"		"
113	MILTON AVE EXTENDED	COMBINED SEWER OVERFLOW	237	SANITARY/ STORMWATER		"
114	WARREN AVE EXTENDED	24 IN STORM DRAIN	238	UNTREATED WASTEWATER		"
115	FAIRMOUNT AVE BRIDGE (NORTH BANK)	24 IN STORM DRAIN	239	STORM WATER WITH POSSIBLE SANITARY CONNECTIONS		"
116	FAIRMOUNT AVE BRIDGE (SOUTH BANK)	24 IN STORM DRAIN	240	"		"
117	WILLIAMS AVE EXTENDED (SOUTH BANK)	33 IN STORM DRAIN	241	"		"
118	MASON ST. EXTENDED (NORTH BANK)	18 IN STORM DRAIN	242	"		"
119	[illegible] RD EXTENDED (NORTH BANK)	24 IN STORM DRAIN	243			"

Discharge Serial	Location	Type of Outlet	Bos. Ref No.	Composition of Discharge	Frequency	Receiving Water
120	Cranmore Road Extended	54 IN Storm Drain	244	Stormwater with [illegible] Sanitary [illegible]		Neponset R
West	Roxbury					
121	Stimson St Extended	12 IN x 12 IN Storm Drain	245	Stormwater with [illegible] Sanitary [illegible]		Charles R
122	North of [illegible] St	30 IN Storm Drain	245A	"		"
123	Capital St Extended	36-IN Storm Drain	255	"		Charles River [illegible]
124	Near Newfield St [illegible] West of LaG[illegible]	[illegible] Storm Drain	256	"		"
Boston	Harbor					
125	Moon Island	Twin Outfalls	-	Combined Sewer	-	Boston Harbor

A-10 (cont)

APPENDIX L

Letters in Regard to Eligibility for Funding

June 16, 1975

April 30, 1975

The Commonwealth of Massachusetts
Water Resources Commission
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

OFFICE OF THE DIRECTOR
DIVISION OF WATER
POLLUTION CONTROL

June 16, 1975

Joseph F. Casazza
Commissioner of Public Works
Public Works Department
One City Hall Square
Boston, Massachusetts 02201

Re: Federal Grants
1976 Priority List

Dear Mr. Casazza:

The Division of Water Pollution Control has reviewed the information submitted by your municipality in response to our letter of March 19, 1975 and has made a preliminary determination that the following projects in your municipality are eligible for federal and state grant participation and we are including them on our 1976 Federal Priority List.

[illegible]

Dorchester Brook #2	$1,600,000	Downtown Waterfront	$682,000
Main & East Interceptor	$34,000,000	Stony Brook Separation	$190,000
South Cove Separation	$2,340,000		
Charlestown	$ 668,000		
S. End Separation & Treatment	$5,700,000		

Preliminary Costs to Boto [illegible]

Please be advised that it will be necessary to file applications and meet all federal and state requirements before a grant offer can be made. If you do not have a consulting engineer or your consulting engineer is not able to provide you with detailed information regarding this program, please call Mr. Richard F. Greeley, Chief of our Construction Grant Program at (617) 727-3855 who will be pleased to answer any questions.

Very truly yours,

Thomas C. McMahon

Thomas C. McMahon
Director

TCM/jl
cc: James A. O'Rourke, Div. Engineer, Sewer Division, City Hall, Boston, Massachusetts 02201

for your information

JOSEPH F. CASAZZA
Commissioner
JOHN F. FLAHERTY
Deputy Commissioner
Telephone 722-4100
Ext. 700

CITY OF BOSTON
PUBLIC WORKS DEPARTMENT
ONE CITY HALL SQUARE
BOSTON, MASS. 02201

DIVISION ENGINEERS
John F. Flaherty, Sanitary
Frederick L. Garvin, Engineering
Charles M. Martell, Highway
John P. Sullivan, Water
James A. O'Rourke, Sewer

April 30, 1975

Thomas C. McMahon, Director
Commonwealth of Massachusetts
Division of Water Pollution Control
100 Cambridge Street
Boston, Massachusetts 02202

Attention: Richard F. Greeley, Chief
Construction Grants Program

Dear Sir:

Reference is made to your letter of March 19, 1975, concerning your Division's priority list for Federal and State construction grants.

Attached please find the lists of projects which the City of Boston would like to submit for your favorable consideration.

Very truly yours,

Joseph F. Casazza
Commissioner of Public Works

JFC/JAO/ljg

Enclosures

Attachment to Letter to Mr. Thomas McMahon, Director,
Division of Water Pollution Control, dated April 30, 1975

Boston Sewers

Summarized below is our response to your inquiry of March 19, 1975 for information on wastewater projects for construction in the next two years.

The project includes design and construction of three wastewater conduits in the City of Boston, as follows:

Main Interceptor Replacement

East Side Interceptor Replacement (North and South Branches)

Mount Vernon Street Sewer

1. Description of project

a. Boston Main Interceptor Replacement

A conduit to replace a large portion of the existing Main Interceptor (c. 1885). The Main Interceptor is proposed to extend generally southeasterly from its junction with the North and South Branches of the proposed replacement East Side Interceptor east of the Southeast Expressway to Dorchester Avenue. The interceptor would extend southeasterly beneath the Dorchester Brook Conduit and a 72-in drain and easterly across the former New Haven railroad yards, thence northerly and easterly to Milhender Street. The interceptor would extend easterly in Milhender Street and across Dorchester Avenue, cross beneath the MBTA subway tunnel in siphon, thence to Old Colony Avenue, southerly in Old Colony Avenue to Vinton Street, and easterly to its junction with the existing Columbus Park Connection immediately upstream of the entrance to the existing MDC Columbus Park headworks. The Interceptor would be joined by the proposed Dorchester Brook Dry Weather Connection in the vicinity of the railroad bridge east of Dorchester Avenue. The Interceptor would be connected to a portion of the existing South Boston Interceptor north of West Seventh Street in Dorchester Avenue, to sewers in B Street and other streets southerly to Vinton Street near Preble Street, and to a segment of the East Branch of the existing South Boston Interceptor east of Old Colony Avenue. The diameters of the replacement conduit are 90-in and 96-in, and the length is about 6,900-ft.

After completion of all the works necessary to divert flows from the section of the existing Main Interceptor between Harrison Avenue and the South Boston Interceptor connection to new sewers and drains, the section of the existing conduit should be abandoned and filled with a suitable material to avoid collapse.

The estimated construction cost of the proposed Main Interceptor Replacement at Engineering News Record Construction Index of 2350 is about $14,000,000.

b. East Side Interceptor Replacement, North and South Branches. North and south branches of a conduit to replace a large portion of the existing East Side Interceptor (c. 1885).

North Branch

The proposed North Branch of the East Side Interceptor would be constructed from Atlantic Avenue generally south to the proposed Main Interceptor. At its northern end the interceptor would start at a junction with the newly reconstructed portion of the East Side Interceptor near High Street in Atlantic Avenue at a stub left for this purpose, and extend southerly in Atlantic Avenue, thence southeasterly across an open parking area at Foster's Wharf to east of the bulkhead wall on the west side of Fort Point Channel. The interceptor would then be extended in the channel southerly beneath Northern Avenue, Congress Street and southwesterly following the center of the channel beneath the now unused Dorchester Avenue bridge, the railroad lift bridges and the presently fixed bridge at Broadway to the west shore of the channel between Broadway and West Fourth Street. From this point, the South Branch would extend southerly on the shore to and beneath the embankment of the Fourth Street Bridge, thence between the Roxbury Canal Conduit and the Southeast Expressway (John F. Fitzgerald Expressway) to a point opposite Union Park Street, and easterly beneath the conduit to a proposed junction chamber at the intersection of the Main Interceptor and the South Branch of the East Side Interceptor. The North Branch would receive flows from seven regulators located at High Street (Belcher Lane), opposite Oliver Street, Congress Street, Summer Street (including flow from the regulator at Beach Street), Kneeland Street, Troy Street, and at East Berkeley (Dover) Street. The sizes of the interceptor are 66-in and 84-in and the total length is about 8,600-ft. The total length of connecting pipes is about 450-ft. The barrel of a portion of the existing North Branch (between Atlantic Avenue and Union Park Street) should be abandoned and refilled with a suitable material to avoid possible future collapse. The estimated cost of the proposed North Branch including connections and incidental work at regulators and tide gates is about $12,500,000 at ENR Index of 2350.

South Branch

The proposed South Branch would receive flows from sewers proposed to be constructed in Massachusetts Avenue and from proposed extensions of sewers at East Concord Street, East Dedham Street and Union Park Street, and would conduct

the flows from southwest to northeast in reverse direction to that in the existing East Side Interceptor. The South Branch would extend northeasterly from a junction chamber in Massachusetts Avenue along the southeast side of the Roxbury Canal Conduit to a point adjacent to the Southeast Expressway north of the exit to the Massachusetts Avenue feeder road. At this point the South Branch would receive flows from Union Park Street at Malden Street. Thence, the interceptor would cross beneath the southbound lane of the Expressway at the elevated section and beneath the feeder and northbound lanes of the Expressway and the east side service road to near the present Boston and Taunton Express terminal building, thence south of the terminal building to the junction with the proposed Main Interceptor. The conduit sizes in the South Branch range from 60- to 78-in, and the total length is about 3,600-ft. The total length of connecting pipes from dry weather connections at East Concord Street, East Dedham Street and Union Park Street is about 900-ft. New regulator and tidewater control structures would be required to intercept dry weather flows at each of these locations, and the existing East Side Interceptor in this reach, as well as existing dry weather connections would be abandoned. The barrel of this portion of the existing South Branch (between Massachusetts Avenue and Union Park Street) should be abandoned and refilled upon completion of the new interceptor, with a suitable material to avoid possible future collapse. The estimated cost of the proposed South Branch, including incidental work at regulators and tide gates, connections beneath the Roxbury Canal Conduit and crossing the Southeast Expressway, at ENR Index 2350 is about $5,500,000.

c. Mount Vernon Street Sewer. A sewer to receive sanitary flows now discharged to a portion of Main Interceptor.

The proposed Mount Vernon Street Sewer from Columbia Point to the existing MDC Diversion Chamber would provide the urgently needed sanitary sewerage facilities to serve the existing Columbia Point housing project, the University of Massachusetts buildings, other public buildings and a commercial area east of Kosciuszko Circle. The sewer would extend northwesterly about 1,800-ft in Mount Vernon Street from near the east end of Monticello Avenue as a 36-in pipe to Brandon Avenue, thence about 1,700-ft as 42-in pipe to the existing MDC diversion chamber. The estimated cost of the proposed Mount Vernon Street Sewer, including connections from the housing development and from the force main from the University, and the gate structure near the diversion chamber, at ENR Index of 2350 is about $2,800,000.

Attachment to Letter to Mr. Thomas McMahon, Director,
Division of Water Pollution Control, dated April 30, 1975

2. Plan showing location of proposed project

Plan is attached as Fig. 1, September 1972.

3. Detailed cost estimate of the various portions

a. Main Interceptor

96-in	5,000-ft	$10,380,000	
90-in	1,600-ft	3,330,000	
30-in	300-ft	290,000	
	6,900-ft		$14,000,000

b. East Side Interceptor

North Branch

84-in (on land)	2,500-ft	$2,340,000	
84-in (channel)	2,000-ft	4,190,000	
66-in (channel)	3,300-ft	5,390,000	
66-in (on land)	800-ft	580,000	
	8,600-ft		12,500,000

South Branch

78-in	950-ft	$1,900,000	
72-in	450-ft	800,000	
66-in	1,500-ft	2,350,000	
60-in	700-ft	450,000	
	3,600-ft		5,500,000

c. Mount Vernon Street Sewer

42-in	1,700-ft	$1,450,000	
36-in	1,800-ft	1,350,000	
	3,500-ft		2,800,000
			$34,800,000 *

* Estimated costs include contractor's contingencies and overhead and profit, and allowances for engineering and general contingencies, at Engineering News Record Construction Cost Index of 2350. Based on preliminary layout in 1972 update of 1967 report, not based on quantities from a "detailed" design.

Attachment to Letter to Mr. Thomas McMahon, Director,
Division of Water Pollution Control, dated April 30, 1975

4. Public need for project

Documented in Camp Dresser & McKee Report to City of Boston, Mass.; "Improvements to the Boston Main Drainage System", 1967.

Construction is required by U.S. Environmental Protection Agency and Massachusetts Water Resources Commission discharge permit (Fed. No. MA 010 1192, Mass. No. M-124).

5. Status of preliminary and final planning

Preliminary planning presented in 1967 report by CDM, updated by CDM in 1972. Further update in progress by CDM under contract with City of Boston.

6. Status of funds for construction

Application for Step 2 funds to be made upon completion of update of report.

7. Name of person and telephone number to contact for more information

Camp Dresser & McKee Inc., Boston, Massachusetts
(Lincoln W. Ryder)
Tel: 742-5151

1.)	Dorchester Brook Dry Weather Connection (to new Main Interceptor) proposed in 1972 Report by Camp, Dresser & McKee, Inc.	$1,130,000
2.)	South Boston and Dorchester Interceptor Connection (to M.D.C. Diversion Chamber) proposed in 1972 Report by Camp, Dresser & McKee, Inc.	$500,000
3.)	Stony Brook and Old Stony Brook Dry Weather Connections (to M.D.C. Boston Main Drainage Relief Sewer) proposed by C.E. Maguire, Inc. in their Report on the Back Bay Fens.	$130,000
4.)	Union Park Pumping Station currently under construction by the Boston Redevelopment Authority. No formal application for funds was made when the Division of Water Pollution Control indicated that no funds would be available at that time. We feel that this project should have been eligible.	$6,600,000
5.)	Rehabilitate the existing Calf Pasture Pumping Station and Moon Island Detention facilities, including the installation of new pumps and related control equipment, provision of chlorination equipment as required by the E.P.A., and other related work.	$2,500,000
6.)	Implement the recommendations of the Process Research Study on Dorchester Bay.	$4,062,000

Boston Redevelopment Authority

"Charlestown Project" Mass. R-55

Proposed Sanitary Sewers:

Site Preparation Contract X	
Harvard St.	$ 4,000
Park St.	2,800
Rutherford Ave.	27,500
Winthrop St.	9,800
Washington St.	32,700
Site Preparation Contract Y	
City Square	115,000
Site Preparation Contract Z	
Warren St.	138,800
Site Preparation Contract A-1	
Bunker Hill St.	60,400
Moulton St.	34,100
Site Preparation Contract B-1	
Chelsea St.	10,900
Water St.	82,300
Site Preparation Contract D-1	
Terminal St. and sewage pumping station	150,000
Total Estimated Cost for Proposed Sanitary Sewers	$668,300

Boston Redevelopment Authority

"South Cove Project"   Mass. R-92

Proposed Sanitary Sewers:

Site Preparation Contract M	$51,100
Harvard St. Hudson St. from TaiTung St. to Harvard St. Hudson St. at Harvard St. area	
Site Preparation Contract N	$375,000
Kneeland St. Hudson St. from Kneeland St. to Harvard St. Tyler St. from Kneeland St. to Harvard St.	
Site Preparation Contract L-1	$1,467,400
Stuart St. from Washington St. to Charles St. South	
Site Preparation Contract Q	$153,100
Arlington St. Cortez St. Berkeley St. Oak St. from Washington St. to Harrison Ave. Marginal St. at Washington St. area	
Site Preparation Contract R	$294,000
Stuart St. from Clarendon St. to Charles St. South	

Total Estimated Cost for Proposed Sanitary Sewers $2,340,600

(includes 10% Engineering Costs)

The streets which this request covers are Clarendon Street (Columbus Avenue to Tremont Street), East Berkeley Street (Tremont Street to Albany Street), and Shawmut Avenue (Union Park Street to East Berkeley Street), all of which are colored in blue on the enclosed plan. The installation of sanitary sewers in the streets is necessary to extend the separation obtained from recently installed sanitary sewers and storm drains under B.R.A. Site Preparation Contracts "D" (colored in red on the enclosed plan) and "G" (colored in yellow on the enclosed plan).

The installation of a new sanitary sewer in Clarendon Street is contingent upon a television inspection of the existing low level sanitary sewer, which ranges in size from 20-inch to 39 inches x 39 inches. Should the condition of this conduit be shown by television inspection to be in favorable condition, it will be rehabilitated rather than replaced. The cost of rehabilitation of the sanitary sewer would be approximately $90,000, as opposed to the replacement cost of $275,000.

The sanitary sewer in Clarendon Street intercepts flow from all the sanitary sewers installed under B.R.A. Site Preparation Contract "D". Sewage is also collected by the Clarendon Street sanitary sewer from an 18-inch sanitary sewer which discharges into a portion of Warren Avenue, westerly of and emptying into Clarendon Street, and also from an alley sewer, 18 inches x 15 inches, which is between Lawrence Street and Appleton Street, westerly of Clarendon Street. The Clarendon Street sanitary sewer presently empties into the existing 41-inch x 60-inch low level combined sewer in Tremont Street. This low level combined sewer will be relaid as a surface drain in a future sewer and drain contract. The low level sanitary sewer in Clarendon Street, whether rehabilitated or relaid, will be connected to the 27-inch sanitary sewer in Waltham Street. (Recently installed under B.R.A. Site Preparation Contract "G"). This connection will be a step toward completing the separation scope of B.R.A. Site Preparation Contract "D" in that it will carry separated sewage flows from the Site Preparation "D" area.

The installation of a new 30-inch sanitary sewer in Shawmut Avenue, from Waltham Street to East Berkeley Street, will be to extend the separation scope of both B.R.A. Site Preparation Contracts "D" and "G" by intercepting sanitary flow from the 27-inch sanitary sewer in Waltham Street and will be used to separate the sanitary flows from surface drainage in this portion of Shawmut Avenue. The 27-inch Waltham Street service will carry the sanitary flow from B.R.A. Site Preparation Contract "D" area, as described above, and presently carries sanitary flow from all the sanitary sewers recently installed under B.R.A. Site Preparation Contract "G". The 27-inch Waltham Street sanitary sewer presently empties into the existing 77-inch x 50-inch low level combined drainage in Union Park Street by means of a temporary 15-inch connection in Shawmut Avenue, installed under B.R.A. Site Preparation Contract "G". Concurrent with the installation of the 30-inch sanitary sewer in Shawmut Avenue, this 15-inch sanitary sewer, which presently also picks up flow from an existing 16-inch x 20-inch alley sewer between Waltham Street and Union Park Street, will have to be relaid with the

flow going from Union Park Street toward Waltham Street. It will be completely disconnected from the 77-inch x 50-inch Union Park Street storm drain. Surface drainage in Shawmut Avenue (Union Park Street to East Berkeley Street) will be by means of two existing combined sewers, which will remain as surface drains upon installation of the 30-inch sanitary sewer. One of these, a line ranging from 12 inches to 24 inches x 36 inches, flows from a point near East Berkeley Street toward and emptying into the 77-inch x 77-inch high level surface drain in Union Park Street. The other is a 16-inch line which expands to 18 inches and runs from Bradford Street to East Berkeley Street. This line, which presently empties into a 72-inch combined sewer in East Berkeley Street, and will eventually empty into a proposed 48-inch surface drain in East Berkeley Street. The cost of installing the 30-inch and 15-inch sanitary sewers in Shawmut Avenue would be approximately $200,000.

The installation of sanitary sewers in East Berkeley Street (from Tremont Street to Albany Street) will be the completing step in the separation scope of B.R.A. Site Preparation Contracts "D" and "G" area, and will also serve to separate flows in East Berkeley Street, Shawmut Avenue (as mentioned above), Washington Street and Harrision Avenue.

There would be two sanitary sewers installed in East Berkeley Street. On the southwesterly side, a sanitary sewer enlarging from 15 inches at Tremont Street to 36 inches at Albany Street, would intercept sewage from the existing 10-inch sanitary sewer in Tremont Street, easterly of East Berkeley Street, from the hereinbefore mentioned proposed 30-inch sanitary sewer in Shawmut Avenue, a proposed 10-inch sanitary sewer in Washington Street, and two proposed 12-inch sanitary sewers in Harrison Avenue, all westerly of East Berkeley Street. On the northeasterly side, a sanitary sewer enlarging from 10 inches at the Castle Square Project to 12 inches at Albany Street would carry sewage from the Castle Square Project, and would intercept a proposed 10-inch sanitary sewer in Washington Street, easterly of East Berkeley Street, and sewage from Harrison Avenue, also easterly of East Berkeley Street.

Both of the sanitary sewers would provide separation in East Berkeley Street. The southwesterly sanitary sewer would serve also to carry out the final separation scope of B.R.A. Site Preparation Contract "D" and "G". Both sanitary sewers would empty into the East Side Interceptor, at Albany Street. The northeasterly sewer and southwesterly sewer in East Berkeley Street would cost approximately $200,000 and $500,000, respectively.

Abatement

The Pollution/and Flood Control Facility shown in green on the enclosed plan, was designed to ultimately achieve control of storm flows and the abatement of pollution due to untreated storm runoff. It will ultimately serve to treat storm drainage from approximately 90% of the South End area. Initially it will serve to treat some amount of combined sewage, as some sanitary connections will contribute raw sewage to the total flow because total separation of certain areas are not within the scope of the Urban Renewal Project. However, the amount of raw sewage will be greatly reduced as implementation of the separation program continues. The facility is provided with a dry weather connection to the East Side Interceptor which is intended to take all flow up to the Point of surcharging the East Side Interceptor.

The Pollution Abatement and Flood Control Facility under Phase II (now under construction) will include inlet structures, screening, chlorination, pumping and metering. The treated effluent will then be discharged into the East Side Interceptor which, in turn, discharges into Boston Harbor. Phase II of the pumping station would add detention and chlorination contact tanks, skimming, fine mesh screening, sampling and sludge collection. These steps, under Phase II, are a vital addition to complete the process of stromwater treatment in order to alleviate pollution in Boston Harbor by providing the required chlorine contact time for the destruction of polluting bacteria by sodium hypochlorite and by providing for the separation and removal of solids and organics combined with the storm drainage. Phase II of the Pollution Abatement and Flood Control Facility will cost approximately $4,700,000.

Following is a summary of costs of the above request:

	Alternate A	Alternate B	Tributary Acres	Flow MGD
Clarendon St..: Sewer Replacement	$ 275,000	$ 90,000	36.7	0.57
Shawmut Ave.: New Sewer	200,000	200,000	59.4	0.92
E.Berkeley St.: New Sewers	700,000	700,000	126.8	1.98
Pumping Station: Phase II	4,700,000	4,700,000	500.0	323
TOTALS:	$5,875,000	$5,690,000		

The Commonwealth of Massachusetts
Water Resources Commission
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

OFFICE OF THE DIRECTOR
DIVISION OF WATER
POLLUTION CONTROL

March 28, 1972

Joseph Casazza, Commissioner
Boston Public Works Department
City Hall
Boston, Massachusetts 02201

Dear Commissioner Casazza:

As a result of earlier discussions I am writing to you to delineate the portions of the Initial Construction Program which will be eligible for Federal and State construction grants. The current Federal and State grant percentage total is 80% leaving the local costs at 20%. Pending legislation could reduce the local participation but for purposes of this correspondence the 20% local share should be used.

From page 165 Volume I of the City of Boston Main Drainage System and the Figure D Plan the following proposed facilities are deemed eligible for Federal and State grants:

1) Main Interceptor

2) Dorchester Brook Dry Weather Connection

3) Mount Vernon Street Sewer - Columbia Point to Columbus Park

4) East Side Interceptor - Roxbury Canal Branch (Mass. Avenue to Union Park Street)

5) East Side Interceptor - Atlantic Avenue to Union Park Street

The following proposed projects are deemed not eligible under the current Federal and State programs:

1) Massachusetts Avenue Sewers

2) Mount Vernon Street Sewer - Massachusetts Avenue to Columbus Park

3) Improvements to Outlets and Appurtenant Facilities

The following proposed projects would be considered eligible for Federal and State grants after addition and approval of a suitably designed chlorination and detention facility with substantial settleable solids removal capability, sludge removal, and provisions to drain the detention facility back into the system:

1) South Boston Pollution Control Conduit - East and South Branch
2) Carson Beach Pumping Station
3) South Boston Force Main

The handling of the State and Federal applications and the payment of the State and Federal grants are as follows:

1) Submit 3 copies of the complete Federal application and 2 copies of the State applications. Applications must show that the City has authority to fund the City's share of the project over and above the State and Federal grants. At the present time the Federal grant is 50 or 55 percent and the State grant is 25%.

2) If applications are complete and approvable, the State can then make a planning grant to the City (up to 7% of the estimated construction costs). These payments are made monthly to the City as the work progresses.

3) When the plans are completed, then the Federal and State applications are processed for construction grants.

4) When the project is under construction, the State makes a payment of 10 percent of the project costs. The remaining payment of the State grant (8 percent) is made when the work is completed and the final costs are known.

5) The Federal grant payments are made when the project is 25, 50, 75 and 100 percent complete.

Enclosed for your information are one set of application forms for the Federal and State grants.

I am hopeful this information satisfies your request from our earlier meeting and I am looking forward to hearing from you shortly.

Very truly yours,

Thomas C. McMahon
Director

TCM/adb

rec'd 5-5

JOSEPH F. CASAZZA
Commissioner
JOHN F. FLAHERTY
Deputy Commissioner
Telephone 722-4100
Ext. 700

CITY OF BOSTON
PUBLIC WORKS DEPARTMENT
ONE CITY HALL SQUARE
BOSTON, MASS. 02201

DIVISION ENGINEERS
John F. Flaherty, Sanitary
Frederick L. Garvin, Engineering
Charles M. Martell, Highway
John P. Sullivan, Water
James A. O'Rourke, Sewer

May 2, 1972

Camp, Dresser & McKee, Inc.
Consulting Engineers
One Center Plaza
Boston, Massachusetts 02108

Attention: Mr. David R. Horsefield

Gentlemen:

Enclosed please find a copy of a letter that was sent to us by the Massachusetts Division of Water Pollution Control, which delineates the portions of the Initial Construction Program which will be eligible for Federal and State construction grants.

I feel that this will be helpful to you in your project of upgrading the 1967 Camp, Dresser & McKee report.

Very truly yours,

James A. O'Rourke

James A. O'Rourke
Division Engineer
Sewer Division

JAO/ljg

Enclosure

APPENDIX M

Revision of Sewer Ordinance

Paragraph 152-163 of Chapter 5

Public Works Department

Current Ordinance Text herewith.

Draft of Revised text submitted
separately by City on December 8, 1975.

Chapter 5 - Public Works Department

(Prepared by David H. Drohan, Assistant Corporation Counsel)

Sec.

Water

150 Water System
151 Water System, High Pressure for Extinguishment of Fires

Sewerage

152 Surface Drainage
153 Appropriations for Sewer Construction
154 Powers and Duties of Commissioner of Public Works
155 Taking of Land for Sewerage Works
156 City Liable for Damages Caused to Private Property
157 Sewerage Construction to be Financed by Bonds
158 Betterment Assessments
159 Criminal Penalty for Damage to Sewerage Works
160 Equity Jurisdiction
161 Collection
162 Apportionment
163 Revisions

Occupation of Public Ways for the Storage and Sale of Merchandise

164 Issue of Licenses to Use Streets for Sale and Storage of Merchandise
165 Procedure Upon Applications for Licenses
166 Reference of Application to Police Commissioner and Approval and Disapproval Thereof by Him
167 Issuance of License
168 Terms of Licenses and Renewals Thereof
169 Fees for Licenses, Etc.
170 Record of Licenses, Etc. To be Kept
171 Occupation of Streets in Market Limits
172 Certain Streets, Etc. May be Designated by Police Commissioner for Hawkers and Peddlers Without Licenses
173 Penalties
174 Planting and Removal of Trees in Public Ways and Temporary Obstruction in Public Ways

§152 SURFACE DRAINAGE

The expense of the construction and maintenance of sewers in the city designed for the disposal of surface drainage solely, except the expenses incurred in the improvement of brook courses or streams for sewerage works purposes, shall be borne wholly by the city.

Historical Notes
St. 1902 c. 526 §1
Sp. St. 1915 c. 108 §1

§153 APPROPRIATIONS FOR SEWER CONSTRUCTION

The board or boards authorized to make appropriations for the city, by a majority vote of the members of such board or boards, approved by the city council of the city by the affirmative vote of two thirds of all the members of each branch thereof, taken by a call of the yeas and nays, or, if there should be no such board or boards, then the city council by such two thirds vote, may annually appropriate, to be met by the issue of bonds as hereinafter provided, such sums as shall be recommended by the commissioner of public works, with the approval of the mayor, for constructing sewerage works in the city, and shall also appropriate, to be met by the annual income and taxes of the city, sums for maintaining and operating the sewerage works, and such sums as the collector-treasurer of the city shall each year determine to be the amount to be used for interest on the bonds issued for sewerage works, and such sums as the collector-treasurer shall each year determine to be the amount to be used for interest on the bonds issued for sewerage works, and also the amount to be used for the sinking funds for bonds issued for sewerage works, which, with all other amounts so used, and their accumulations, will pay all such bonds at maturity: and there shall also be used for said sinking funds all premiums received from the sale of said bonds, and all amounts received for breach of any contract for constructing sewerage works, or for securities deposited as security for making such contracts and declared to be forfeited to the city, or for sales of property. All sewers, drains, pumping stations and other works for the collection or disposal of sewerage, or surface or ground water in the city shall be included in the term "sewerage work", as used in this chapter, and no such work shall hereafter be constructed in the city, except under authority of this chapter, or of chapter 323 of the Acts of 1891 and acts in amendment of or in addition to said acts or either of them, unless the same has been ordered to be constructed before the passage thereof. Any such sewerage work aforesaid may hereafter be constructed by the commissioner of public works of the city, or by such other officer as the mayor shall designate, in any public way or place, or in any

land owned by the city or in which the city has acquired authority to lay such sewerage work; but before commencing the construction of any sewer the superintendent or officer shall cause to be recorded in the Suffolk Registry of deeds a statement approved by the mayor of his intention to construct the sewer, naming the street or otherwise describing the land in which the sewer is to be constructed, and giving his estimate of the cost thereof.

Historical Notes
St. 1897 c. 426
St. 1898 c. 257 §1
St. 1899 c. 450 §1
St. 1900 c. 478 §3
St. 1903 c. 268 §1
St. 1930 c. 178 §1

§154 POWERS AND DUTIES OF COMMISSIONER OF PUBLIC WORKS

The commissioner of public works of the city from time to time, with the approval of the mayor, may order that sewers or drains be constructed in the city; that streams or water courses within the limits of the city be filled up or diverted from their original channels; that any such channel or any new channel be widened, deepened, paved or covered; that closed or open sewers or conduits be constructed for the drainage of lands, or that any part of any such stream or water course be so treated, or that any one or more of such things be done.

The commissioner of public works or such other officer as the mayor of the city shall from time to time direct shall construct sewerage works as authorized by section 151, and shall carry out every such order of the commissioner, and may at the expense of the city construct and maintain such work under or over any water course or private land, railroad or public way, in such manner as not to unnecessarily obstruct or impede public travel, and may alter or change the location or grade of any public way in which any such work is constructed, may alter or change the course of any water course, and in general may do any other act or thing deemed by him to be necessary in constructing or maintaining such work.

Historical Notes
St. 1897 c. 426
St. 1903 c. 268 §2
St. 1953 c. 473
Rev. Ord. 1961 c. 21 §1

§155 TAKING OF LAND FOR SEWERAGE WORKS

The commissioner may take for the city by purchase or otherwise any lands in fee, and any rights or easements in lands, sewers, water courses and ways, which the commissioner may deem necessary for sewerage works, and in order to take any such lands, water courses, rights or easements other than by purchase, the commissioner, shall sign and cause to be recorded in the registry of deeds for the county of Suffolk a statement that the same are taken for sewerage works, describing the same as certainly as is required in a common conveyance of land, and the lands, water courses, rights or easements so described shall upon such recording become the property of the city.

Historical Notes
St. 1897 c. 426 §3
St. 1953 c. 473
Rev. Ord. 1961 c. 21 §1

§156 CITY LIABLE FOR DAMAGES CAUSED TO PRIVATE PROPERTY

The city shall pay all damages sustained by the owner of any land, water course, right or easement taken by the board, or injured in any manner, or by any person, in doing any act or thing under section 154, the same to be agreed upon by the board with the approval of the mayor and the owner, and if they cannot agree the damages shall, on the petition of the owner or mayor, be determined by a jury of the superior court for the county of Middlesex or for the county of Suffolk in the manner provided by law with respect to lands taken for highways in the city, and costs shall be taxed and execution issued in favor of the prevailing party, as in civil cases. Any person whose water rights are thus taken or injured may apply as aforesaid within three years from the time of such taking or injury, and not afterwards. In any case where a petition is filed by the mayor in the county of Middlesex, the cause shall be transferred to the county of Suffolk if the owner, within thirty days after the filing of the petition, shall file in the office of the clerk of courts for the county of Middlesex a statement in writing that he desires the cause to be tried in the county of Suffolk.

Historical Notes
St. 1897 c. 426 §5
St. 1953 c. 473
Rev. Ord. c. 21 §1

§157 SEWERAGE CONSTRUCTION TO BE FINANCED BY BONDS

The collector-treasurer of the city, to meet the expenses incurred in constructing any sewerage works heretofore or hereafter ordered to be constructed in the city, shall from time to time on the request of the commissioner, approved by the mayor, issue to the total amount appropriated, but not exceeding two million dollars in the aggregate in the period included in the years 1897 and 1898, bonds of the city, registered or coupon, as the collector-treasurer shall from time to time determine, and the same, so far as issued prior to the first day of January 1908, shall not be considered in determining the limit of indebtedness of the city; the bonds shall have printed on the face thereof the words, Sewerage Loan; shall be countersigned by the mayor and be made payable in terms of thirty years from their date; and shall bear such rates of interest not exceeding four per cent per annum, payable semi-annually on the first day of January and the first day of July of each year, and be issued and disposed of in such amounts, in such modes, and at such times and places, as the collector-treasurer, with the approval of the mayor shall from time to time determine.

Historical Notes
St. 1897 c. 426 §6
St. 1932 c. 224 §1
St. 1953 c. 473
Rev. Ord. 1961 c. 21 §1

§158 BETTERMENT ASSESSMENTS

The public works commissioner of the city at any time within six months after any new sewer or drain for the collection or disposal of sewage or of surface or ground water is completed, shall assess an amount not exceeding three fourths of the cost thereof proportionately upon the several estates specially benefited by such sewer or drain; but no such assessment shall exceed the amount of the special benefit received. Every assessment made under this section shall constitute a lien upon the estate assessed from and after the date of the approval by the mayor of the order of the commissioner of public works under section 2 of chapter 511 of the acts of 1945 for the construction of the sewer or drain. Such lien shall continue for the same period and under the same conditions as a lien established under chapter 80 of the General Laws and acts in amendment or revision thereof. The provisions of said chapter 80, and acts in amendment or revision thereof, relative to the apportionment, division, reassessment, abatement and collection of assessments, and to interest, shall apply to assessments made under this section.

The commissioner of public works of the city may assess upon any estate heretofore or hereafter connected with a public sewer a reasonable part of the cost of construction thereof; provided that no owner of the estate has paid for such sewer or has paid any assessment for its construction. Every assessment made under this section shall from the time of assessment constitute a lien upon the estate assessed. Such lien shall continue for the same period and under the same conditions as a lien established under chapter 80 of the General Laws and acts in amendment or revision thereof. The provisions of said chapter 80, and acts in amendment or revision thereof, relative to the apportionment, division, reassessment, abatement and collection of assessments, and to interest, shall apply to assessments made under this section.

Historicial Notes
St. 1897 c. 426 §7
St. 1912 c. 371 §1
St. 1945 c. 511 §1
St. 1955 c. 93 §1
St. 1957 c. 31 §1

Cross References
G.L. c. 80
G.L. c. 83

§159 CRIMINAL PENALTY FOR DAMAGE TO SEWERAGE WORKS

No person shall destroy or injure any sewerage work of said city, or without lawful authority therefor pollute or place or maintain any obstruction in any natural water course therein; and whoever violates any provision of this section shall for each offence be punished by a fine not exceeding one thousand dollars or by imprisonment in the house of correction not exceeding six months, or by both such fine and imprisonment.

Historical Note
St. 1897 c. 426 §9

§160 EQUITY JURISDICTION

The supreme judicial court and any justice thereof, shall have jurisdiction in equity, on the complaint of said city by its attorney, to enforce the provisions of this section and to prevent any violation thereof.

Historical Note
St. 1897 c. 426 §10

§161 COLLECTION

Every assessment for an improvement specified in this chapter shall bear interest until paid, from the day when it is payable, which shall be the thirtieth day after it is made, and if not paid before the first day of April of the year next after the year in which it is made, the assessors of the city shall include in the annual tax bills for the parcel, or in separate bills, annually, until the assessment is paid, a sum not exceeding ten per cent of the amount thereof, and shall also include in the bill for the first year interest on said amount from the thirtieth day after the assessment is made to the last day of October of such year, and in the bill for each year thereafter one year's interest on the amount of the assessment remaining unpaid; or, if the parcel has been divided as hereinafter provided, the assessors shall include the several apportionments and their proportions of interest in the annual tax bills, for the divisions, or in separate bills, and every amount in any such bill shall be collected and paid into the city treasury in the same manner in which taxes are collected and paid.

Historical Notes
St. 1906 c. 393 §7
St. 1920 c. 101 §1

§162 APPORTIONMENT

The owner of any estate in the city on which an assessment has been made for the construction of any highway, sewer or sidewalk in the city, may pay a part of such assessment, and the commissioner of public works of the city may then at his discretion, with the approval of the mayor, relieve a proportional part of the estate from further lien and liability for the assessment, and the remainder of the assessment shall continue to be a lien on the remaining part of the estate and be assessed and collected in the manner provided by law for the entire assessment, so far as applicable.

Historical Notes
St. 1895 c. 297 §1
St. 1953 c. 473
Rev. Ord. 1961 c. 21 §1

§163 REVISIONS

The owner of any real estate in the city on which any betterment assessment authorized by law shall have been made may apply to the board which made the assessment for a revision thereof;

provided, that any part of the same remains unpaid under protest, and provided, further, that an application to revise an assessment hereafter made shall be filed with the commissioner one year after he gives notice that the assessment has been made; and the commissioner, within two months thereafter, shall revise or refuse to revise the assessment. If a revision is made any excess of the original assessment over the revised assessment shall be abated by the commissioner; and if any part of such excess shall have been paid under protest the commissioner shall issue a certificate of the abatement to the collector-treasurer, who shall thereupon repay such part to the person for whom the assessment was paid, or to his legal representative, and charge the same to the appropriation for the work on account of which the asssessment was made.

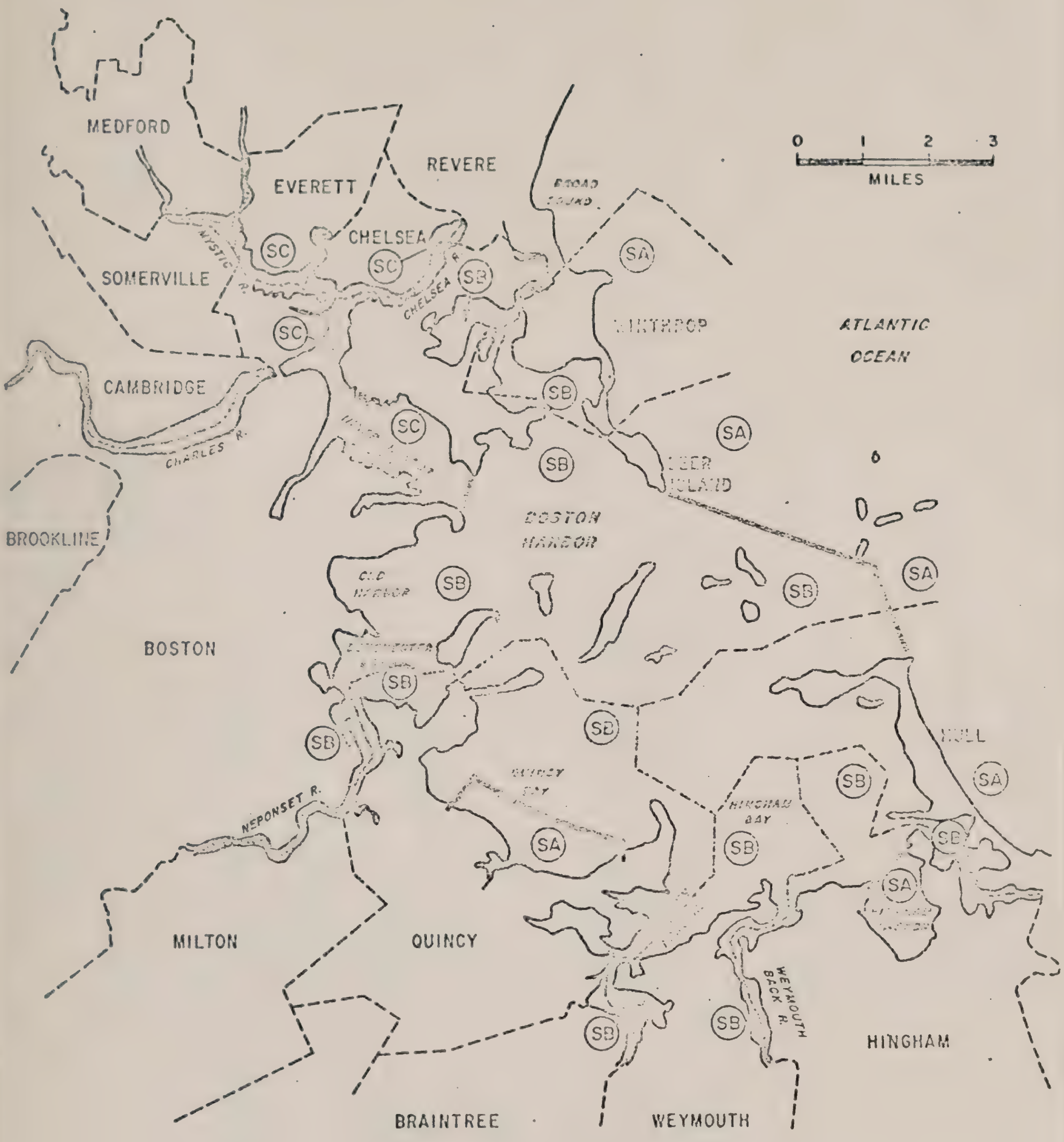
Historical Notes

St. 1903 c. 235 §1
St. 1953 c. 472
Rev. Ord. c. 21 §1

APPENDIX N

WATER QUALITY CLASSIFICATION

- Boston Harbor Classification (Fig. 112)
- Boston Harbor Waters Classification (3 pgs)
- Excerpts from "Rules and Regulations for the Establishment of Minimum Water Quality Standards and for the Protection of the Quality and Value of Water Resources"
- I-Definitions
  Salt Water Standards



COMMONWEALTH OF MASSACHUSETTS
WATER RESOURCES COMMISSION

BOSTON HARBOR
CLASSIFICATION

WATER USE CLASSES – Ⓐ Ⓑ Ⓒ Ⓓ (SA) (SB) (SC)

— CHANGE CLASSIFICATION

Commonwealth of Massachusetts
Water Resources Commission
Division of Water Pollution Control

BOSTON HARBOR WATERS CLASSIFICATION*

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION	CLASSIFICATION
Boston Harbor inside a line from the southerly tip of Deer Island to Boston Lighthouse to Point Allerton in Hull except as noted below	Bathing Recreational boating Fish & wildlife propagation Fishing Shellfishing Assimilation	Same	SC	SB
Boston Inner Harbor westerly inside a line from the southerly tip of Governor's Island to Fort Independence including the Charles, Mystic and Chelsea (Creek) Rivers and Fort Point Channel	Fish & wildlife propagation Fishing Industrial processing and Cooling	Same	SC	SC
Quincy Bay in Quincy from Bromfield Street near the Wollaston Yacht Club northerly to buoy C "1" southeasterly to the "Willows" sometimes known as Lord's Point on the northerly shore of Houghs Neck in Quincy	Bathing Recreational boating Fish and wildlife propagation Fishing Shellfishing	Same	SA	SA
Hingham Harbor in Hingham inside a line from Crows Point to Worlds End Promontery	Bathing Recreational boating Fish and wildlife propagation Fishing Shellfishing	Same	SA	SA
Weymouth Fore River in Quincy and Weymouth	Recreational boating Fish and wildlife propagation Fishing Shellfishing, Industrial processing and cooling	Same	SB	SB

*Subject to rise and fall of tide

BOSTON HARBOR WATERS*

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION	CLASSIFICATION
Weymouth Back River in Weymouth and Hingham	Recreational boating Fish & wildlife propagation Fishing Shellfishing Industrial processing and Cooling	Same	SB	SB
Weir River in Hull and Hingham	Bathing Recreational boating Fish & wildlife propagation Fishing Shellfishing Industrial cooling and Processing	Same	SB	SB
Neponset River in Boston, Milton and Quincy	Recreational boating Fish & wildlife propagation Fishing Shellfishing Industrial cooling and Processing.	Same	SB	SB

*Subject to the rise and fall of the tide.

FRESH WATER-BOSTON HARBOR AREA

Metropolitan- North Coastal, Spot Pond, Stoneham and Medford Charles, Norumbega Reservoir Weston Charles, Weston Reservoir, Weston	Water Supply	Water Supply	A	A
Cambridge-Stony Brook Reservoir Waltham, Lexington, Lincoln Upper Hobbs Brook Reservoir Lower Hobbs Brook Reservoir	Water Supply	Water Supply	A	A

FRESH WATER-BOSTON HARBOR AREA

BOUNDARY	PRESENT USE	ANTICIPATED FUTURE USE	PRESENT CONDITION	CLASSIFICATION
Hingham-Accond Pond in Hingham, Rockland and Norwell Accond Brook source to entrance Accond Pond, Hingham	Water Supply	Water Supply	A	A
Fresh water streams flowing into Boston Harbor area unless specifically mentioned elsewhere	-	-	-	B

FOR THE ESTABLISHMENT OF
MINIMUM WATER QUALITY STANDARDS
AND FOR THE PROTECTION OF THE
QUALITY AND VALUE OF WATER RESOURCES

REGULATION I Definitions

The terms used in the following regulations are defined as follows:

1. Appropriate Treatment - means that degree of treatment required for the waters of the Commonwealth to meet their assigned classifications or any terms, conditions, or effluent limitations established as part of any permit to discharge issued under the provisions of the Massachusetts Clean Waters Act, or any effluent standard or prohibition established by the Division under authority of Section 27 (6) of the Massachusetts Clean Waters Act.

2. Division - means the Commonwealth of Massachusetts, Division of Water Pollution Control.

3. Person - means any agency or political subdivision of the Commonwealth, public or private corporation or authority, individual, partnership or association, or other entity, including any officer of a public or private agency or organization, upon whom a duty may be imposed by or pursuant to any provision or Sections 26-53 inclusive, of Chapter 21 of the General Laws.

4. Sewage - means the water-carried waste products or discharges from human beings. sink wastes, wash water, laundry waste and similar so-called domestic waste.

5. The "Waters of the Commonwealth" and "Waters" - means all waters within the jurisdiction of the Commonwealth, including, without limitation, rivers , streams, lakes, ponds, springs, impoundments, estuaries, coastal waters, and ground waters.

6. Fresh Waters - means waters not subject to the rise and fall of the tide.

7. Salt Waters - means all waters subject to the rise and fall of the tide.

8. Cold Water Stream - means a stream capable of sustaining a population of cold water fish, primarily Salmonids.

9. Seasonal Cold Water Stream - means a stream which is only capable of sustaining cold water fish during the period of September 15 through June 30.

10. Waste Treatment Facility - processes, plants, or works, installed for the purpose of treating, neutralizing, stabilizing or disposing of wastewater.

11. Pollutant - means any element or property of sewage, agricultural, industrial, or commercial waste, run-off, leachate, heated effluent, or other matter in whatever form and whether originating at a point or non-point source, which is or may be discharged drained or otherwise introduced into the waters of the Commonwealth.

12. Discharge - means the flow or release of any pollutant into the waters of the

Commonwealth.

13. Wastewater - means sewage, liquid or water carried waste from industrial, commercial, municipal, private or other sources.

14. Zone of Passage - means a continuous water route of the volume, area and quality necessary to allow passage of free-swimming and drifting organisms with no significant effect produced on the population.

Salt Water Standards

Class SA - These are waters of the highest quality and are suitable for any high water quality use including bathing and other water contact activities. These waters are suitable for approved shellfish areas and the taking of shellfish without depuration, have the highest aesthetic value and are an excellent fish and wildlife habitat.

WATER QUALITY CRITERIA

Item	Criteria
1. Dissolved oxygen	Not less than 6.5 mg/l at any time.
2. Sludge deposits-solid refuse-floating solids-oil-grease-scum	None other than of natural origin or those amounts which may result from the discharge from waste treatment facilities providing appropriate treatment. For oil and grease of petroleum origin the maximum allowable concentration is 15 mg/l.
3. Color and turbidity	None in such concentrations that will impair any uses specifically assigned to this class.
4. Total Coliform bacteria per 100 ml	Not to exceed a median value of 70 and not more than 10% of the samples shall ordinarily exceed 230 during any monthly sampling period.
5. Taste and odor	None allowable
6. pH	6.8 - 8.5
7. Allowable temperature increase	None except where the increase will not exceed the recommended limits on the most sensitive water use.
8. Chemical constituents	None in concentrations or combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, impair the palatability of same, or impair the waters for any other uses.

Radioactivity	None in concentrations or combinations in excess of the limits specified by the United States Public Health Service Drinking Water Standards.

Class SB - These waters are suitable for bathing and recreational purposes including water contact sports and industrial cooling, have good aesthetic value, are an excellent fish habitat and are suitable for certain shell fisheries with depuration (Restricted Shellfish Areas).

Water Quality Criteria

Item	Criteria
1. Dissolved oxygen	Not less than 5.0 mg/l at any time.
2. Sludge deposits-solid refuse-floating solids-oils-grease-scum	None other than of natural origin or those amounts which may result from the discharge from waste treatment facilities providing adequate treatment. For oil and grease of petroleum origin the maximum allowable concentration is 15 mg/l.
3. Color and turbidity	None in such concentrations that would impair any uses specifically assigned to this class.
4. Total Coliform bacteria per 100 ml	Not to exceed an average value of 700 and not more than 1000 in more than 20% of the samples.
5. Taste and odor	None in such concentrations that would impair any uses specifically assigned to this class and none that would cause taste and odor in edible fish or shellfish.
6. pH	6.8 - 8.5

7. Allowable temperature increase	None except where the increase will not exceed the recommended limits on the most sensitive water use.
8. Chemical constituents	None in concentrations or combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, impair the palatability of same, or impair the water for any other use.
9. Radioactivity	None in such concentrations or combinations in excess of the limits specified by the United States Public Health Service Drinking Water Standards.

Class SC - These waters are suitable for aesthetic enjoyments, for recreational boating, as a habitat for wildlife and common food and game fishes indigenous to the region, and are suitable for certain industrial uses.

WATER QUALITY CRITERIA

Item	Criteria
1. Dissolved oxygen	Not less than 5 mg/l during at least 16 hours of any 24 hour period nor less than 3 mg/l at any time.
2. Sludge deposits-solid refuse-floating solids-oil-grease-scum	None other than of natural origin or those amounts which may result from the discharge from waste treatment facilities providing appropriate treatment. For oil and grease of petroleum origin the maximum allowable concentration is 15 mg/l.
3. Color and turbidity	None in such concentrations that would impair any uses specifically assigned to this class.
4. Total Coliform bacteria	None in such concentrations that would impair any uses specifically assigned to this class. see Note 2

5. Taste and odor	None in such concentrations that would impair any uses specifically assigned to this class and none that would cause taste and odor in edible fish or shellfish.
6. pH	6.5 - 8.5
7. Allowable temperature increase	None except where the increase will not exceed the recommended limits on the most sensitive water use.
8. Chemical constituents	None in concentrations or combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, impair the palatability of same, or impair the water for any other use.
9. Radioactivity	None is such concentrations or combinations in excess of the limits specified by the United States Public Health Service Drinking Water Standards.

Note 2 - no bacteria limit has been placed on Class "SC" waters because of the urban runoff and combined sewer problems which have not yet been solved. In waters of this class not subject to urban runoff or combined sewer discharges the bacterial quality of the water should be less than an average of 5,000 coliform bacteria/100 ml during any monthly sampling period. It is the objective of the Division to eliminate all point and non-point sources of pollution and to impose bacterial limits on all waters.

APPENDIX O

Industrial Cost Recovery and User Charges for Operation and Maintenance

- Excerpts from Ordinances 1961 - Chapter 11

  Ordinances 1962 - Chapter 13

- Legislation Pending, HR 5759

0-1

ORDINANCES OF 1962, CHAPTER 13.

RELATIVE TO THE ANNUAL CHARGES FOR THE USE OF THE COMMON SEWERS.

In the Year Nineteen Hundred and Sixty-two.

Be it ordained by the City Council of Boston, as follows:

SECTION 1. The first paragraph of section 8 of chapter 30 of the Revised Ordinances of 1961, as appearing in chapter 11 of the Ordinances of 1961, is hereby amended by striking out, in the first sentence, the words "a primary charge of twelve dollars, an additional charge of one dollar for every thousand cubic feet, in excess of twelve thousand cubic feet" and inserting in place thereof the words: a primary charge of five dollars, an additional charge of one dollar for every thousand cubic feet, in excess of five thousand cubic feet.

SECTION 2. This ordinance shall apply only to charges assessed under section 8 of chapter 30 of the Revised Ordinances of 1961 during the last three months of the year nineteen hundred and sixty-two and thereafter.

In City Council, November 26, 1962. Passed.
J. M. DUNLEA, *City Clerk.*

Approved December 3, 1962.
JOHN F. COLLINS, *Mayor.*

A true copy.
Attest:
City Clerk.

City of Boston
Administrative Services Department
Printing Section

ORDINANCES OF 1961, CHAPTER 11.

ESTABLISHING ANNUAL CHARGES FOR THE USE OF THE COMMON SEWERS.

In the Year Nineteen Hundred and Sixty-one.

Be it ordained by the City Council of Boston, as follows:

Chapter 30 of the Revised Ordinances of 1961 is hereby amended by adding after section 7 the following caption and section:

Annual Sewer Use Charges.

SECTION 8. Under authority of section 16 of chapter 83 of the General Laws and every other authority hereunto enabling, the annual charge for the use of the common sewers of the city by every estate in the city having one or more particular sewers discharging into such common sewers is hereby established as a primary charge of twelve dollars, an additional charge of one dollar for every thousand cubic feet, in excess of twelve thousand cubic feet, of water supplied by the city to such estate and billed in the calendar year in which the charge established by this section is assessed, and a further charge of one dollar for every thousand cubic feet of water derived or received by such estate from any other source during the period covered by such billing; provided, however, that if water so supplied, derived or received is used on the estate in such a manner as not to enter the common sewers of the

city, in determining the charge established by this section the quantity of water so used shall be deducted from the aggregate amount of water so supplied, derived or received during such period; provided further that in no case shall any charge be assessed under this section in excess of a just and equitable charge; and provided also that persons exempt from the payment of water rates and charges, but only such persons, shall be exempt from the charge established by this section.

The quantity of water supplied by the city through a water meter in good working order shall be determined by the readings of such meter. The quantity of all other water shall be estimated by the commissioner of public works by any reasonable and equitable method apt in the circumstances of the particular case to determine the quantity of water discharged through the particular sewer or sewers of the estate into the common sewers of the city; provided, however, in the case of water not supplied by the city but derived or received by an estate from another source, and also in the case of water used on an estate in such a manner as not to enter the common sewers of the city, that if such water is measured by one or more water meters in good working order installed and maintained on the estate by the commissioner of public works at the request and expense of the owner or tenant of such estate, the quantity of water so derived or received, or the quantity of water so used, or both, as the case may be, shall be determined by the readings of such meter or meters. Water supplied by the city or any other source exclusively for fire pipe purposes shall not be included in determining the charge established by this section.

During the last three months of every calendar year commencing with the current year nineteen hundred and sixty-one, the commissioner of public works shall assess upon every estate in the city having a particular sewer discharging into the common sewers of the

city, and in January of the next following calendar year commit to the collector-treasurer, the charge established by this section, which shall be due and payable at such time or times in such next following calendar year and in such instalments, if any, as said commissioner shall from time to time determine." Said commissioner shall in his order of assessment designate as the owner of a parcel assessed the person who was liable to assessment therefor on the preceding January first under the provisions of chapter fifty-nine of the General Laws.

In City Council, December 11, 1961. Passed.
W. J. MALLOY, *City Clerk.*

Approved December 13, 1961.
JOHN F. COLLINS, *Mayor.*

A true copy.
Attest:

City Clerk.

CITY OF BOSTON
ADMINISTRATIVE SERVICES DEPARTMENT
PRINTING SECTION

HOUSE . . . . No. 5759

The Commonwealth of Massachusetts

HOUSE OF REPRESENTATIVES, April 8, 1975.

The committee on Urban Affairs, to whom were referred so much of the recommendations of the Metropolitan District Commission (House, No. 185) as relates to providing for assessment of sewer use charges to meet capital and operating expenses of said commission and for other purposes (accompanied by bill, House, No. 205); the petition (accompanied by bill, Senate, No. 1654) of Joseph B. Walsh for legislation to revise the basis for apportionment of certain costs of construction of the sewerage system of the Metropolitan District Commission; the petition (accompanied by bill, Senate, No. 1655) of Joseph B. Walsh for legislation to provide for assessment of sewer use charges to meet capital and operating expenses of the Metropolitan District Commission and for other purposes; and the petition (accompanied by bill, House, No. 1178) of Angelo M. Scaccia for legislation to establish the apportionment of costs for pollution control facilities, report recommending that the accompanying bill (House, No. 5759) ought to pass.

For the committee,

JOSEPH E. BRETT.

The Commonwealth of Massachusetts

In the Year One Thousand Nine Hundred and Seventy-Five.

AN ACT PROVIDING FOR ASSESSMENT OF SEWER USE CHARGES TO MEET CAPITAL AND OPERATING EXPENSES OF THE METROPOLITAN DISTRICT COMMISSION AND FOR OTHER PURPOSES.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Section 1A of Chapter 92 of the General Laws is hereby amended by striking out the third paragraph thereof.

SECTION 2. Section 2 of said chapter 92 is hereby further amended by striking out, at the end of the first sentence, the words "provided, that the commission shall, without expense to Quincy, make all connections and take and construct intercepting sewers necessary to enable Quincy to drain by gravity its territory into the metropolitan sewer. The sewerage systems of all drainage areas not now drained by the south metropolitan system shall be constructed in accordance with the so-called separate system of sewage." and inserting in place thereof the following: All new systems of sewers, and extensions of existing systems, making connection with the metropolitan sewerage district system shall be constructed in accordance with the so-called separate system of sewerage so as to totally exclude storm water and water from roofs and grounds.

SECTION 3. Said chapter 92 is hereby further amended by striking out Section 5 and inserting in place thereof the following section: —

Section 5. Principal and Interest Costs.

The proportions in which each of the cities and towns included in the metropolitan sewerage district shall annually pay to meet the total interest and principal requirements for each fiscal year on debt incurred for the metropolitan sewerage district system, shall be based on the respective populations of said cities and towns as ascertained by the last preceding state census, and on the

population equivalents of the industrial wastes (defined in Section 5A) contributed to that system by the respective cities and towns, as determined by the commission. If less than the whole area of any city or town is included in the metropolitan sewerage district, the population and population equivalents only of that part of the city or town so included, as determined by the commission, shall be used as a basis for determining the proportions to be paid under this section.

SECTION 4. Said chapter 92 is hereby further amended by striking out Section 5A and inserting in place thereof the following section: —

Section 5A. Industrial Cost Recovery.

For purposes of this act, "industrial wastes" means wastes discharged to the metropolitan sewerage district system by users who would be subject to the cost-recovery provisions of federal law with respect to any federal grant that might be made for construction of works that will treat such wastes. "Non-industrial wastes" include all other wastes.

The commission shall annually calculate the portions of all federal construction grants awarded after March 1, 1973, that are attributable to treatment of industrial wastes received into the metropolitan sewerage district system from cities and towns served by that system. The commission shall further allocate such portions among the cities and towns so served, in accordance with the population equivalents of their industrial waste flows to the treatment works for which the federal construction grants were awarded. If federal law permits, the commission may aggregate the industrial waste portions of such grants and allocate such aggregated sum among the cities and towns in proportion to the population equivalents of their industrial waste flows to the metropolitan sewerage district system. The commission shall inform each city and town of its allocated share as determined under this section.

Each member city and town to which a share of cost is thus allocated shall assess its industrial users to recover from them the portions of that share which are attributable to treatment of their wastes. Every municipal program of industrial cost recovery and any amendments thereto shall be subject to the approval of the

commission, which shall not be withheld if the program meets requirements of federal law, and, upon request, the commission may assist a city or town in the development and application of appropriate methods of assessment. Such methods may include division of industrial users into classes according to their typical wasteload characteristics.

If, within the time allowed for meeting federal grant conditions, any city or town served by the metropolitan sewerage district system fails to establish an acceptable program of industrial cost recovery in accordance with this section, the commission shall establish, and may from time to time alter and amend, an industrial cost recovery program which such city or town shall promptly adopt and implement, pending establishment of its own acceptable program in accordance with the preceding paragraph.

The proceeds of industrial cost recoveries under this section shall be remitted not less than annually, in the form of checks made payable to the Commonwealth, to the state treasurer, who shall deposit them in a special fund to be known as the M.D.C. Wastewater Management Fund. Such fund shall be invested and employed and payments shall be made from it from time to time as may be required by state or federal law, provided, that not less than ten percent of all cost recoveries deposited in the fund, together with interest earned thereon, shall be used to defray administrative expenses of the commission.

SECTION 5. Chapter 92 is hereby further amended by striking out Section 5B and inserting in place thereof the following section: —

Section 5B. Cost of Extensions.

The cost of construction of extensions of the metropolitan sewerage district system to provide service for additional cities and towns, or to provide additional service for one or more cities and towns, shall be paid by the cities and towns so benefitted to the extent that such cost is not met by federal or state construction grants. The annual amounts required to meet payments of principal and interest on debt incurred to finance such construction, as estimated by the state treasurer, and to meet any deficiencies in the amount previously paid in, shall be apportioned among such benefitted cities and towns in propor-

tion to the respective additional capacities thereby made available to them by such construction. The proportion to be paid by each city and town benefitted may be established by law; provided, however, that if such proportions are not so established they shall be determined by the commission.

SECTION 6. Said Chapter 92 is hereby further amended by striking out section 6 and inserting in place thereof the following section: —

Section 6. User Charges for Operation and Maintenance.

The proportions in which the cities and towns included in the metropolitan sewerage district system shall annually pay to meet the total cost of operation and maintenance, including replacement, of the system shall be based on their respective populations contributing to the system, and on the population equivalents of other wastes contributed to the system by the respective cities and towns, as determined by the commission. If less than the whole area of any city or town is included in the metropolitan sewerage district, the contributing population and population equivalents only of that part of the city or town served by the district, as determined by the commission, shall be used as a basis for determining the proportions to be paid under this section. The commission shall annually allocate the cost shares for operation and maintenance, including replacement, among the cities and towns so served. For purposes of this section, "replacement" refers to such expenditures for obtaining and installing equipment, accessories, or appurtenances during the useful life of treatment works as are necessary to maintain the capacity and performance for which the works are designed and constructed.

Each city and town to which a portion of cost is thus allocated shall adopt and administer a program of user charges requiring all users within its jurisdiction to pay their proportionate shares of such allocation. Every such program and any amendments thereto shall be subject to approval of the commission, which shall not be withheld if the program meets requirements of federal law, and, upon request, the commission may assist a city or town in the development and application of appropriate methods of assessment. Such methods may include division of users into classes according to their typical wasteload characteristics.

If, within the time allowed for meeting federal grant conditions, any city or town served by the metropolitan sewerage district system fails to establish an acceptable program of user chargers in accordance with this section, the commission shall establish, and may from time to time alter and amend, a user charge program which such city or town shall promptly adopt and implement, pending establishment of its own acceptable program in accordance with the preceding paragraph.

SECTION 7. Said Chapter 92 is hereby further amended by adding after Section 6 the following new Section 6A: --

Section 6A. Regulation of Connections to the Metropolitan Sewerage District System.

The commission may require present and prospective municipal, industrial or other users of the metropolitan system, or of any sewer tributary thereto, to comply with applicable provisions of federal or state law respecting (1) toxic and pretreatment standards; (2) construction, operation and maintenance of pretreatment facilities; (3) monitoring, record-keeping and reporting of discharges to the system; (4) notification of proposed new discharges or substantial changes in discharges to the system; (5) user charges; and (6) industrial cost recoveries.

Within eighteen months of the passage of this Act, each city or town served by the metropolitan system shall have in effect a sewer-use ordinance no less stringent than regulations of the commission itself pertaining to sewer use, together with procedures for monitoring and enforcing compliance with such ordinance. Upon request, the commission may assist a city or town in developing the ordinance required under this section. Nothing in this Act shall be deemed to restrict the authority of the commission to adopt, modify and repeal sewer use regulations, to issue orders directing compliance with them, and to levy assessments for violations, pursuant to section 12 of Chapter 705 of the Acts of 1945. Sewer use ordinances and regulations shall be subject to approval by the commission.

SECTION 8. Said Chapter 92 is hereby further amended by adding after section 6A the following new section 6B: —

Section 6B. Entry by Commission to Inspect Waste Sources.

Officers or agents of the commission may enter at reasonable times any property, public or private, connected directly or indirectly to the metropolitan sewerage district system, for purposes of inspecting or sampling any sewage, drainage, substances or wastes conveyed through such a connection; of inspecting any monitoring equipment or procedures required to be maintained with respect to such discharges; and of examining any records pertaining to such discharges or to the operation of pretreatment works.

No information acquired by officers or agents of the commission upon entry under this section may be used in any criminal proceeding based on such information against an individual who makes it available upon demand to such an officer or agent, except in a prosecution for the making of a false statement or record or for otherwise failing to comply with recording requirements under federal or state law.

SECTION 9. Said Chapter 92 is hereby further amended by striking out section 7 and inserting in place thereof the following section: —

Section 7. Annual Determination of Proportions.

On or before September first of each year, the commission, in accordance with sections 5, 5A, 5B, and 6, and after consultation with the cities and towns served by the metropolitan sewerage district, shall establish the porportions in which the respective cities and towns shall annually pay money to the commonwealth to meet interest and principal costs, industrial cost-recovery requirements, and costs of maintenance and operation of the metropolitan system. For these purposes, calculations of industrial waste contributions from each city and town shall be based on current and annually updated industrial waste surveys. Not later than September first of each year the commission shall submit to the officials of such cities and towns the ratios of apportionment so established. Not later than October first of each year the commission shall certify and transmit its determinations to the state treasurer.

SECTION 10. Said Chapter 92 is hereby further amended by striking out section 8 and inserting in place thereof the following section: —

Section 8. Payment by Cities and Towns.

The amount of money required each year from every such city and town to meet the interest and principal requirements and costs aforesaid and the deficiency, if any, shall be estimated by the state treasurer in accordance with the proportions as determined aforesaid by the commission, and shall be included and made a part of the sum charged to such city or town, and shall be paid by the city or town to the commonwealth as provided by section twenty of chapter fifty-nine.

SECTION 11. Said Chapter 92 is hereby further amended by adding after section 8 the following new section 8A: —

Section 8A. Regulatory and Enforcement Authority.

The commission may adopt, modify and repeal regulations for implementing and administering the provisions of this Act, and may issue orders to municipal, industrial or other users directing compliance with the terms of any such regulation or provision.

Any person who violates a provision of this Act or any valid regulation, ordinance or order adopted or issued thereunder or under section 12 of Chapter 705 of the Acts of 1945, may be subject to enforcement proceedings as provided in this paragraph. At the request of the commission, the Attorney General may bring a civil action for appropriate relief against such a violator, including a temporary or permanent injunction, and the superior court shall have jurisdiction to grant the relief it deems appropriate. A violator shall also be liable to a civil penalty not to exceed three thousand dollars per day and, if the violation was willful or negligent, to a criminal penalty not to exceed ten thousand dollars per day of such violation, which may be assessed in an action brought by the Attorney General at the request of the commission.

SECTION 12. This Act shall take effect upon its passage.

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